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MOST substantial evidence in favor of the advantages to be gained by the improvement of the country roads of the United States, for which the ENGINEERING AND MINING JOURNAL has frequently contended, is that furnished by the counties of Kentucky which have taken stock in turnpike companies, a recent act of the legislature empowering them to do this. In Warren County this method of encouraging road building seems to have had particularly successful results. The county is now provided with 59 miles of turnpike, constructed with this aid, and most of them are paying good dividends to the shareholders. The county has already placed $60,000 in this manner, and the people are to vote upon the question of a further investment of $30,000 during the present month. According to local papers, there is no doubt that the vote will be decisively favorable. One of them sums up the general opinion by saying that the county "never took a wiser step or one fraught with more benefits to the people than when it got an act from the legislature enabling it to induce the building of turnpikes by taking stock in them."

FROM a preliminary statement issued by the Bureau of Statistics of the Treasury Department it appears that the exports and imports of gold and silver during the fiscal year ending June 30th, 1891, were as follows: Exports, $108,729,288; imports, $36,212,334; an excess of exports over imports of $72,516,954. The excess of exports over imports of specie during the fiscal year 1890 was $18,172,094, and during the fiscal year 1889 $67,678,460. The exports of gold alone during the last fiscal year amounted to $86,363,622, against $17,274,491 in the previous year, and the imports to $18,246,512, against $1,294,334, the excess of exports over imports in 1891 being $68,117,110, against $4,331,149 in 1890. The excess of the exports of gold over imports during the past year was the largest in the history of our commerce. As is well known, the greater part of this gold has gone out during the last six months of the fiscal year. The continued draught of gold from this country during the past month, since the rate of exchange has fallen below the rate at which gold can be exported at a profit, has thrown some light upon the reason of this extraordinary movement, recent shipments going to France, which country is paying a premium for gold to increase its accumulation, paying out silver in the meanwhile. The only imports of gold into this country for many months have been the recent receipts of Spanish coin, amounting to but a few hundred thousand dollars. This has been promptly sold upon arrival to pay for Cuban sugar. Of course the importation was not an exchange operation, the metal coming hither simply as merchandise. Without this explanation, however, these imports would be misleading.

## ANGLO-AMERICAN MINING COMPANIES

Our esteemed contemporary the *Economist*, of London, in commenting upon English investments in American gold and silver mines, quotes the ENGINEERING AND MINING JOURNAL in such a manner as to convey a false impression. The statement which we made (June 6th, 1891) in noticing the attempt to float the Maid of Erin Silver Mines, Limited, in London—that there are very few mines in Leadville paying dividends to-day which were opened ten years ago—was of course not intended as the declaration of a general principle applicable to all American mines, and constituting a guide to investors. As a matter of fact, the number of mines in Colorado, Utah, Montana, California, and other Western States which were opened ten years or more ago, and are still paying handsome dividends, is very large. This does not happen to be the case at Leadville, on account of the nature of the ore deposits in that district.

The *Economist's* suspicion that capital is not asked in England for American mines really worth working, is equally unfounded. There are of course numerous mining undertakings presented to the attention of investors which prove failures, and this will always be the case so long as there are thoughtless and unwary people to be thus misled. The notion that it is English investors alone who lose money in these unfortunate enterprises is absurd, and arises from the different manner in which joint-stock companies are floated in the two countries. In England the limited-liability law necessitates greater publicity concerning the affairs of all corporations than is the case in the United States. The shares of the majority of the mining companies organized in the former country are publicly offered. In the United States very few are presented in this manner, the capital generally being privately subscribed. Consequently, unless a company's shares are listed upon some stock exchange, very little is known concerning its affairs outside of the persons directly interested.

The experience of English investors in American silver mines during the past two or three years has certainly not been unsatisfactory. They have learned in a measure to avoid the "wild cat" enterprises which are always offering, and, investing more intelligently, have demonstrated the truth of the statement which we have repeatedly made, that there is no business which makes so large a return for money invested as mining conducted with prudence and skill.

One Anglo-American company, the New Guston, which has just made its semi-annual statement, has surpassed all previous records, having paid 40 per cent. upon its capital stock during the past six months, and bringing its total payments since its organization, November 15th, 1888, to 31s. 6d. per share, the par value of the latter being 20s., fully paid. The Yankee Girl Silver Mines, Limited, operating neighboring mines, completed the first year of its existence June 30th, 1891, with the payment of a dividend which made its total for the year 45 per cent. upon its capital stock. These are exceptional rates, but there are many others among the recently organized English companies owning American mines, which are making larger dividends than could be expected in any other branch of business. The same is true of a large number of home companies. Moreover, it must be remembered that there are many close corporations, like the Bluebird Mining Company, Limited, of Montana, and the Eureka Hill Mining Company, of Utah, which are known to be among the most profitable, but which make no public statements of their earnings.

## THE SITUATION OF THE IRON MARKET.

The unprecedented decline in the production of pig iron during the first six months of this year, on which we commented last week, is shown in the following table of production for each year since 1873, with the annual increase or decrease.

| Year. | Pig iron production. Net tons. | Increase. Net tons. | Decrease. Net tons. | Year. | Pig iron production. Net tons. | Increase. Net tons. | Decrease. Net tons. |
|---|---|---|---|---|---|---|---|
| 1873.... | 2,868,278 | ..... | ..... | 1885.... | 4,529,869 | ..... | 59,744 |
| 1874.... | 2,689,413 | ..... | 179,865 | 1886.... | 6,365,328 | 1,835,459 | .... .. .... |
| 1875.... | 2,266,581 | ..... | 422,832 | 1887.... | 7,187,206 | 721,878 | ..... ..... |
| 1876 .. | 2,093,236 | ..... | 173,345 | 1888 ... | 7,268,507 | 81,301 | ..... |
| 1877.... | 2,314,585 | 221,349 | ..... | 1889.... | 8,516,079 | 1,247,572 | ..... |
| 1878.... | 2,577.361 | 262,776 | .. ..... | 1890 .. | 10,307,028 | 1,790,949 | ..... |
| 1879.... | 3,070,875 | 493,514 | ..... | Last half of | | | |
| 1880.... | 4,295,414 | 1,224,539 | ..... . | 1890.... | 5,199,253 | ..... | ..... |
| 1881.... | 4,641,564 | 346,150 | ..... | | | | |
| 1882.... | 5,178,122 | 536,558 | ... ..... | First half of | | Decrease | |
| 1883.... | 5,146,972 | ..... | 31,150 | 1891.... | 3,776,556 | in 6 mos.. | 1,422,697 |
| 1884.... | 4,589,613 | ..... | 557,359 | | | | |

In 1873, the maximum production was reached as the culmination of the period of speculation following the war, and leading to the panic of 1873. For the next three years the production decreased each year. The slow recovery from the panic produced a slight increase in 1877 and 1878. In 1879, the country realized that the panic was over, and the "boom" of that year gave an extraordinary impulse to production, culminating in an increase of 40 per cent. in 1880, and a continued increase for two years following; making six consecutive years in which the statistics showed a continuous advance. Another reactionary period of three years set in, the worst year being 1884, the year of the partial panic following the Grant & Ward failure, when production decreased about 11 per cent. The partial panic had spent its force in 1885, and in 1886, as if to make up for the losses of the preceding years, an extraordinary increase of 40 per cent. took place, and for the five-year period, 1886–1890, inclusive, an increase was shown every year, the production in 1890 being more than double that of 1885, and almost double that of 1882, the last year of maximum production. The years 1889 and 1890 presented the exceptional spectacle of two consecutive years, each showing an increase of 20 per cent. over its predecessor, and a total increase of 42 per cent. in the two years over the production of 1888, itself a year of greater production than any that had preceded it. This extraordinary increase was an indication that a reaction must take place, even had there been no outside cause, such as the financial collapse in Europe, which took place in the latter part of 1890.

In the ENGINEERING AND MINING JOURNAL of Sept. 27, 1890, there was published a diagram and table of the statistics of the iron trade for 20 years, in connection with an article by MR. WILLIAM KENT on a thirty years' retrospect of the iron trade. In that article the following words were used concerning the outlook at that date:

"Judging of the future by the past, the diagram of pig iron production would indicate that the iron trade is now at a pinnacle of prosperity from which there must be a decline in a very short time; but judging from present indications of the actual condition of the trade and of the general prosperous condition of the country, together with the low prices now prevailing, there is not the slightest indication of any decline. The present outlook is one of continued increase in production and in general prosperity."

Within less than two months after these words were written the financial panic appeared in London, and immediately the consumption and consequently the production of pig iron began to fall off. The event thus tends to prove that it is safer to make prognostications of the future of the iron trade from past history than from existing indications. The judgment of the future by the past, made in September, 1890, was strictly correct, while that made at the same time from the apparent condition of the country was altogether wrong. At the present time, prognostications of all kinds are hazardous, for there has been at no time in the past history of the trade just such a condition as now exists. There never has been so sudden or so great a drop in production as the present. Past experience shows that a moderate decrease in production following a period of great activity lasts for three or more years; but we have no experience which will enable us to predict what will happen after a sudden decrease in six months, which is nearly double the amount of any previous decrease in three years. The great decline in production in 1874 was followed by a continued but smaller decline in 1875. The great decline of 1884 was followed by a still further, but slight, decline in 1885. If the decline of 1891 should be followed in 1892, not by a further decline, but by an increase, it would be altogether unprecedented. But the decline itself is unprecedented, so that we are left without any statistical basis upon which to form a judgment.

Judgments based upon the present business outlook are, of course, quite as uncertain. In favor of continued depression we have the still unsettled condition of finances in South America and Europe, the great exports of gold from this country, the stoppage of investments in new railroads and in new projects generally, and the uncertainty as to silver legislation. In favor of reaction from the depression we have the promise of abundant crops and greatly increased exports, the somewhat improved condition of general domestic business, and the apparent financial soundness of our mercantile concerns. At the present time the latter seem to be, as we pointed out last week, the stronger elements.

## NEW PUBLICATIONS.

RETAINING WALLS FOR EARTH, including the theory of earth pressure as derived from the ellipse of stress, with an appendix presenting the theory of Prof. Weyrauch. By Malverd A. Howe, C. E., professor of Civil Engineering, Rose Polytechnic Institute. Second edition, revised and enlarged. 136 pages. John Wiley & Sons, New York. Price, $1.25.

The demonstrations in this work are based upon the theory first advanced by Rankine in 1858. The author states that an attempt has been made to present the theory in a shape easily followed by those who have only a knowledge of algebra, geometry and trigonometry; whenever calculus has been resorted to, the work has been simplified as much as possible. Weyrauch's determinations are given in the appendix. Graphical solutions are frequently employed. Numerous examples are given, showing the application of the formula under the various conditions met in practice, and tables of coefficients are given to decrease the labor of substitution in the formulas. A table of references to other authorities on retaining walls is given in the appendix, which will be acceptable to those who wish to make a thorough study of the subject. Prof. Howe states that the whole text has been critically read, and the proofs verified by Prof. Thos. Gray, which is an additional guarantee to the students of the value of the book and of its typographical accuracy.

ELECTRICITY: The Science of the Nineteenth Century. A Sketch for General Readers. By Emma Marie Caillard. 310 pages. Appleton & Co., New York. Price, $1.25.

The author is an Englishwoman, and her aim, as stated in her preface, is to give such an outline of modern electrical science as may be readily understood by readers who have no previous acquaintance with the subject, and who, though unable to make a serious study of it, wish to acquire sufficient knowledge to enable them to follow with intelligent interest the marvelous progress which is being made in this ever widening field. She has succeeded most admirably in the bold attempt, and has produced a book which combines in a remarkable degree scientific precision of statement, fullness and clearness of description and literary polish. The first part of the book is devoted to static and atmospheric electricity, the subject being treated historically, beginning with the ancients' knowledge of the properties of amber, treating of the early experiments down to the time of Franklin, and of more recent investigations of lightning and thunderstorms. The discussion of lightning and lightning rods is very full and interesting. Part II. is a brief discussion of the properties of magnets and the phenomena of magnetism. Part III. treats of current electricity, including the galvanic battery, the chemical, physiological and magnetic effects of the current, and the units of measurement. Part IV. discusses the practical appliances of electricity, including dynamo-electric machines and electromotors, electric lighting, transmission of power, the telegraph, the telephone and electro-metallurgy.

A few blemishes appear in this otherwise excellent book, such as the author's making light of the serious dangers of overhead wires for high-tension current; her statement that in electric street railways the vehicles are of course driven by accumulators, and that therefore success has been attained only for short distances and light weights, ignoring the tremendous success attained by electric street railways in America in which accumulators are not used; and the like. We regret, also, that in giving credit to most of the great discoverers in electricity she has not even mentioned Joseph Henry. These blemishes, however, do not prevent the book from being about the most satisfactory one on the subject for the general reader that we have yet seen.

ELECTRIC TRANSMISSION OF ENERGY; AND ITS TRANSFORMATION, SUBDIVISION AND DISTRIBUTION. A practical handbook. By Gisbert Kapp, C. E. Third edition, revised. 354 pages. 130 illustrations. Whitaker & Co., London. D. Van Nostrand Co., New York. Price, $3.00.

The author of this work is a leading English electrician, inventor and writer. The present edition is a revision and enlargement of the second edition, which contained many changes from the text of the first, with a view of bringing the book up to date, the description of obsolete machines being omitted, and that of more modern machines inserted. The book is both theoretical and practical, and mathematics is but sparingly used in it, but the greater part of it is so severely technical that it can only be properly appreciated by students already well advanced in electrical studies. Careful comparisons are made of the efficiency of electrical transmission, as compared with hydraulic, pneumatic, wire rope and other methods of transmission, and the conclusions reached show that the author is eminently conservative and judicial.

The following is an example of his method of treatment of this subject:

"Whether electricity is ultimately destined to supersede shafting, pulleys and other gear now commonly used for transmission of energy over short distances, is a question which only enthusiasts or those imperfectly acquainted with the technical part of the subject can be bold enough to answer. The practical engineer is content to go step by step, and to solve those problems which appear most promising before he attacks those less certain of success, and viewed in this light it would seem that long-distance transmission offers a better field for the application of electricity than short-distance transmission."

His conclusions as to the relative merits of wire rope and electric transmission are as follows:

1. It pays to transmit cheap water power by wire rope if the distance is less than a mile, and electrically if the distance is a mile or more. This applies to all powers. 2. It pays to transmit cheap steam power if the amount of energy required at the receiving station does not exceed 10 horse power. If the distance is less than a mile use wire-rope transmission, for distances of one mile and upward to two or three miles use electric transmission. Beyond this limit a small local steam or gas engine is preferable. The author describes a few important instances of electric transmission, giving both electrical and financial data.

## CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

### The Neville Direct Process.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In your issue of July 18th it was stated that the Neville direct process has been started by the Harriman Wrought Iron Company, at Harriman, Pa. Can any of your readers tell me where I can obtain any printed information concerning the Neville process?

NEW YORK, July 22, 1891. WILLIAM KENT.

### The Metallurgy of Antimony.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Permit me to ask, through your correspondence column, for such information as some of your readers may be willing to give in regard to practical processes for purification or refining of metallic antimony, especially in the matter of separation of small quantities of silver and copper. In the metallurgical books with which I am familiar, there is only a very brief statement of the general processes for antimony with no details of the refining methods, a matter which is undoubtedly of interest to many.

I have worked out a process which is successful in the separation of antimony from mixed mattes, but the metal so separated contains a little of each of the other elements which were originally present in the matte; and before concluding my experiments on the purification problem I naturally wish to learn as much as possible of what has been already accomplished. I shall be pleased to hear of any published work in which the metallurgy of antimony is treated of in a satisfactory manner.

NORTH YAMHILL, Yamhill Co., Ore., July 11, 1891. INVESTIGATOR.

### The Overflow of the Colorado and Lake Cohuilla.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Returning from a journey to Mexico I find the notices of the reflooding of portions of the Colorado desert exciting general attention. Much misapprehension and many misstatements might have been avoided by consulting the official report on this region made by me to the War Department of the United States nearly 40 years ago. It may be found in Vol. V of the Reports of U. S. Pacific Railroad Explorations and Surveys.

So far as I am aware, Colonel Frémont had never visited that region, and the fact that portions of the desert were below the sea-level was not known before the winter of 1853, when, in company with Lieutenant Parke (now General Parke), I traversed the length of the desert and took the barometrical observations which determined the fact. The announcement was made in the San Francisco daily papers, and there was much discussion of the origin of the lake and of its desiccation. It was Dr. Wozencraft, of California, who then proposed to cut a canal from the Colorado at, or near, New River to flood the desert. New River is the chief channel by which, at certain stages of high water in the Colorado, the overflow finds its way back into the depression. Such overflows have occurred frequently before, and will no doubt occur again. As the flood in the river subsides the overflow will cease, and the water left in the basin will, as before, rapidly evaporate and leave a fresh layer of fine silt over the wide expanse of the treeless desert. W. P. BLAKE.

MILL ROCK, New Haven, July 23, 1891.

### The Dead River Gold Range, Michigan.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Since the snow left the hills and valleys of the Dead River district, exploration work has been energetically prosecuted. Among those engaged in this work is Mr. Julius Ropes, of Ishpeming, Mich., well known in connection with Lake Superior gold mining, who is operating on lands held by the Dead River Miners' Pool.

Much has already been accomplished this season, and several very promising lodes have been uncovered. Work has proved so encouraging that an organization is being effected for the further development of two of these properties. Some very rich rock has been obtained in the more northern lode, the Beaver assaying $502 per ton, but $12 of which was in silver. The associated minerals are galena, the rock containing 6% of lead, iron and copper pyrites and zinc blende, in a gangue of quartz. Much free gold is visible in fine grains when inspected under a lense. The lode has been uncovered at a point some distance to the east, and shows well in mineral as at the above joint.

A short distance to the north is a vein from which assays of $30 to $112 per ton have been obtained.

The formation here is a granite dipping to the south about 60°, forming the hanging wall, while a talcoid slate forms the foot wall of the quartz. Under the slate is again the granite. At other points are veins running in and parallel with the talcoid schist beds at the contact of these with underlying or overlying strata.

The "pool" owns interests in several 40-acre tracts along the gold-bearing formation, among which is one southwest of the Beaver prospect, on which are several veins, one of which has been explored to some extent and promises well. No free gold is discernible to the eye, but the lode is well charged with mineral, and assays well in gold and silver.

Various improvements to open the district are in progress. The wagon road is being improved and will be extended from the river to the camps, back in the hills. The river will also be bridged.

A night shift of miners has been put on at the Beaver lode and work has been begun upon an exploring shaft to be sunk to a depth of 50 ft. The Superior Gold and Silver Mining Company, which was organized several years ago to work a property near Ishpeming, is also operating a prospect in this district on which work has been done showing considerable fine ore and free gold. Its lode is also in the granite formation. The Dead River range runs about N. 70° and is distant about 10 miles from Ishpeming, by the road. A number of locations have been made and much promising land has been taken under option and purchased. L.

ISHPEMING, MICH., July 8, 1891.

## PHYSICAL SUFFERING FROM THE EFFECTS OF COMPRESSED AIR.

Written for the Engineering and Mining Journal by William L. Saunders, C. E.

A sick man, though perhaps a bad doctor, is usually a good judge of how he feels. I remember an experience in a Vermont schoolhouse one evening where an Irish debating society was in session. I had heard a good deal about the way these rustics wrestled with doubtful questions of life, and being at that time harassed with uncertain thoughts I went in. The subject about which they were evidently much shaken up was inscribed on the blackboard that hung over the chairman's desk. I read,

"IS THE ART OF DROWNDING PAINFUL?"

The excitement was oiled down for a moment as an old weather-beaten fellow stood up and said with much deliberation:

"I stand before ye as wan who has been there. Born and bred was I on the ocean. I have been drownded too times, and the last one, well, begad, I thought it was the last one."

Mr. Moir, in the ENGINEERING AND MINING JOURNAL of the 18th inst., has described a visit made by the Editor of the JOURNAL and myself to the Hudson River Tunnel. As he refers to my collapse and thereon produces "a new theory of disease due to compressed air," frankly stating that it is "published for criticism," I have thought that your readers might like to hear from one who has been "suffering from the effects of compressed air." But let me first recite a little history.

A Russian physician, Dr. Hammel, in the early part of this century experienced the effects of compressed air in diving-bell work. Dr. Hammel describes the severe pains felt in the ears and advises persons to swallow rapidly. Beginning about the year 1835 there seems to have been a medical compressed-air craze in France and Germany, stimulated apparently by experiments made by Junod. It was said that compressed air would cure deafness, and it was even heralded as a sure cure for consumption. A so-called "compressed-air bath" was employed, into which the patient was placed, under a pressure of from 5 to 10 lbs. per sq. in. Dr. Andrew H. Smith, Surgeon of the New York & Brooklyn Bridge Co., whose treatise on the caisson disease won for him the prize at the College of Physicians in New York, in referring to these "compressed-air baths" says:

"As the pressure employed is comparatively slight the effects observed differ widely from those produced by the high pressure employed for engineering purposes. The difference is not only in degree, but also in kind, and therefore the literature relating to compressed air as a remedy, although rich and in itself very interesting, throws but little light upon the subject."

Dr. Smith mentions, however, that these investigations doubtless first suggested the employment of compressed air for mining purposes.

It is generally known that a French engineer, Triger, was the first to use successfully the pneumatic process of sinking. Triger put down a shaft through quicksand in much the same way as the foundations were built for the Brooklyn Bridge. Some of Triger's observations are interesting.

"At the pressure of three atmospheres it is impossible to whistle."

"In the compressed air every one speaks through the nose."

"The laborers in ascending the ladders were much less out of breath than when mounting to a similar height in the open air."

"A laborer who had been deaf since the Siege of Antwerp (1832) always heard more distinctly in compressed air than any of his comrades."

Dr. Smith states that the first recorded cases of caisson disease are those of two laborers employed by Triger who are said to have "experienced severe pains in the arms and knees coming on about half an hour after ascending in the open air.'

The next record of caisson disease is that given by a Frenchman named Pol, about the year 1845. It is curious to note that at this time, and even as late as the Brooklyn Bridge work, a good deal of difficulty was experienced by the soot from candles. The use of the incandescent electric light has obviated this difficulty.

There were several cases of pulmonary congestion recited by Pol. Dr. Smith's opinion is that the impurity of the air, as evinced by the amount of soot it contained, had a good deal to do with the sickness. The conclusions arrived at by Pol, as given by Dr. Smith, are as follows:

(1) "A pressure of four and one-quarter atmospheres is not in itself dangerous, but the return into the open air may cause serious accidents, and even sudden death. The danger is in proportion to the previons pressure.

(2) "The changes consist in congestion, among which are congestion of the lungs and of the brain.

(3) "A tendency to these congestions increases with the age.

(4) "One case seems to indicate that the quickest and safest means of restoration is an immediate return into the compressed air."

The first valuable record relating to the effect of compressed air upon workmen was that at the sinking of the piers of the St. Louis Bridge. One of the foundations for this bridge was carried to a depth of 110 ft. below the surface of the water: thus the men were required to work in a pressure of about 50 lbs. to the square inch. The physician in charge of this work was Dr. Jaminet, whose observations are given in "Physical Effects of Compressed Air," published in St. Louis in 1871.

The caisson disease should not be confounded with that purely mechanical effect, pain in the ears. There are few, if any, persons who do not experience some inconvenience at the ears and nose while the air pressure is increasing. Dr. Smith states that the men under his charge were warned not to go into the lock unless they were able, when holding the nose and blowing forcibly, to feel the air enter both ears. In this way it is shown that the passages are unobstructed. The pain in the ear is simply due to excessive pressure from the outside upon the drum, and this pain lasts until the pressures on both sides are equalized. This equalization takes place through the ears and nasal passages. If these passages are obstructed, and the pressure is great enough, the drum of the ear is sometimes ruptured. On the Brooklyn Bridge John Campbell, a lock tender, was "caught in the lock" unable to "change his ears." The following night he was taken with very severe pain in the ear, which continued for about ten days, resulting in discharge of pus, which gave relief.

I have experienced this ear pain to exactly the same degree of intensity while in a diving suit, in the Hudson River Tunnel, and up in a balloon

at a height of about three miles. In no case has it resulted in any deafness or pain, except a momentary one while the pressure is being equalized, and my experience has taught me under such circumstances to swallow and to blow my nose as rapidly as possible.

Bleeding at the nose also takes place in the air lock usually while coming out, and it is caused by the rupture of vessels in the nose and other passages in the head produced by the too rapid tendency of the compressed air inside to get out.

When one has passed through the lock and into the compressed air he feels little or no inconvenience. In fact, there is an exhilaration. Drs. Jaminet and Smith agree that in a highly compressed air chamber respiration is increased.

The pulse invariably increases in rapidity. Dr. Smith states that he has frequently seen the pulse rise to 120 upon entering the caisson, but after from a half an hour to two hours it falls back to its original condition. This is attributed to a surcharge of blood with oxygen, requiring less activity of circulation.

Inability to whistle is very noticeable. It seems impossible to produce an accumulation of pressure in the mouth enough greater than that on the outside to give sufficient velocity to the air to produce sound. A delightful place is the Hudson River Tunnel for whistling bores—Mrs. Shaw, for instance.

When Moses blew the candle out he was certainly not in a compressed air chamber. The flame can be blown out, but the incandescence of the wick is sufficient to combine with the highly oxygenated atmosphere and ignite it as soon as you stop blowing. I have succeeded after repeated trials in blowing a candle out, but I found that in every case I had blown the red part of the wick away.

Dr. Smith defines the "caisson disease" as follows:

"A disease depending upon increased atmospheric pressure, but always developed after the pressure is removed. It is characterized by extreme pain in one or more of the extremities and sometimes in the trunk, and which may or may not be associated with epigastric pain and vomiting. In some cases the pain is accompanied by paralysis more or less complete, which may be general or local, but is most frequently confined to the lower half of the body. Cerebral symptoms, such as headache and vertigo, are sometimes present."

There have been several theories advanced by experienced persons to account for this disease.

Francois ascribes it to the liberation of air which had been absorbed by the blood when under pressure, but which was set free when the pressure was removed. Professor Rameaux, of Strasburg, also advances this theory.

Dr. Jaminet attributes the disease as "simply the result of exhaustion from too rapid tissue-change, caused by the absorption of an excess of oxygen."

M. Paul Bert agrees with Francois and Professor Rameaux, except that he claims that the bubbles liberated are those of nitrogen instead of air, thus interrupting the circulation.

Dr. Smith ascribes more importance to the mechanical than to the chemical influence of compressed air in producing the disease. "It is obvious," said Dr. Smith, "that if the blood were exposed to an equal pressure in all parts of the body there would be no change in its distribution. It is equally clear that the blood, if free to move, will pass from a place where the pressure is greater to one where it is less. The body is made of structures of different densities and presenting a varying resistance to compression. But permeating these structures in every direction are vessels in perfect communication throughout the entire system, and filled with a mobile fluid, which is free to change its locality in obedience to any force which is brought to act upon it. Now, when the surface of the body is subjected to an even pressure on all sides, the tendency is to a distribution of this pressure toward the center. If the body were composed entirely of solids, this could be effected only by the compression of these solids, and a point would very soon be reached where the resistance would balance the compressing force, and the parts lying more toward the center would remain unaffected. But the presence of a fluid in the structures, with free channels in which to move, changes all this. While the solid tissues resist compression, the blood retreats from the surface to the center, and accumulates there until an equilibrium of pressure is produced. Hence we deduce the law, that under high atmospheric pressures the centers will be congested at the expense of the periphery.

But, aside from location, vessels coursing through dense and resisting organs will be less exposed to external pressure than those passing through soft and yielding structures. Hence a second law that firm and compact structures will be congested at the expense of those more compressible."

Inasmuch as the symptoms and effects are so varied it seems natural to infer that the caisson disease should not be attributed to any one cause, except pressure of air. Even Dr. Smith admits that "the subject is involved in obscurity which can be removed only by a study of a larger number of cases than have occurred as yet." Some men are affected in the feet, others in the arms, some in the limbs, and others, like myself, in the body. In some cases the effects are almost instantaneous after leaving the lock, and cases have even occurred *in* the lock, while there are instances where several hours have elapsed before the trouble begins. For my own part I had been under air pressure many times before without the slightest ill effect. I had twice before been in the Hudson River Tunnel. On the last occasion I am convinced that we came out of the locks too rapidly. We had spent two hours under pressure, and this should have prompted us to unlock gradually. After coming out I spent several minutes at the telephone, and was in the act of washing my boots when severe pains, increasing in intensity, caught me at a point which seemed to be at the very bottom of my windpipe. At one time I thought it was in my back, but, as a matter of fact, the pains were *within* my body and not at any point on the surface. They seemed to be located about the center of the trunk. Just before entering the hospital tank the pains were so severe that I was unable to breathe freely. It seemed a clear case of a man's breath being taken away with the cause of the trouble still acting. I felt just as I might, had I received a blow from a "slugger" squarely in the pit of the back.

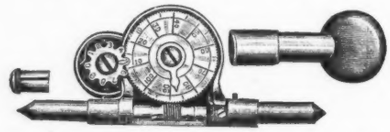
The relief was rapid and complete. No sooner had the pressure been turned on in the tank than I felt as well as ever. This fact seems unaccountable on the basis of any other theory except that of Dr. Smith; that is, a congestion, which seems to have been pulmonary, took place after the pressure had been relieved, and putting the pressure on again, as was done in the medical air tank, simply restricted the congestion, driving the blood out of the congested parts and allowing the circulation to return to its normal condition through gradual reduction of pressure. I was, perhaps, half an hour coming out of this hospital. During this time I made one attempt to get out earlier, but the return of the pains prompted me to turn the pressure on again. Here was a condition of things where the turning on or off of air pressure produced or relieved pain. Can this be accounted for on the basis of blood poisoning or any other chemical process? And is it not purely a physical effect, equally as much so, in fact, as the pain one feels when his foot is "asleep"? An abnormal circulation had been produced by some cause or other which was removed, and the tendency of the blood to rush into the limb produced pain. Dr. Endicott, of Plainfield, N. J., illustrates the case by the wrapping of a string tightly about the finger. No pain is felt until the string is taken off suddenly.

The medical air tank seems to me indispensable about caisson work. Dr. Smith recommends it and outlines a plan for its construction. He suggests a "tube 9 ft long and 3½ ft. in diameter, having one end permanently closed and the other provided with a door opening inward and closing air-tight; this tube to be placed horizontally and provided with ways by which a bed could be slid into it." Mr. Moir's tank was more comfortable than this, as it was 6 ft. in diameter, a fact which I appreciated by indulging in a delightful stretch when the pains which had so doubled me up had been relieved.

As to Mr. Moir's statement that "Fat people are less able to stand air pressure," because, based upon the theory he gives, "their blood carries more carbon due to a greater waste of tissue," I am afraid Mr. Rothwell and I are physical examples that in this instance, at least, practice does not agree with theory. The only ill effects felt by Mr. Rothwell were in his ears, and I believe he is still troubled there; but, notwithstanding his avoirdupois, he passed through the ordeal with a comfortable stomach. That this case was a clear triumph of the fat man over the thin one is based upon something more than theory. All the records show that fat men are affected by this disease more readily than others. Out of 42 men who lost little or no time from sickness on the Brooklyn Bridge, 25 were "spare," 14 "medium." and 3 "fat." Of those paralyzed the proportion of fat men over the thin was 4 to 1; while the three men who died were all "heavy."

## CHURCH'S DOUBLE SPEED INDICATOR.

The accompanying illustration shows an improvement made upon an old type of speed indicator, differing from those already on the market in being adaptable to shafts running in either direction—right or left—the graduations on the revolving wheels reading properly by simply applying the proper end of the instrument. There are two points on worm spindle, either one of which may be covered by the thumb-piece shown



while the other is in use; thus the counter may be right or left hand at pleasure. In addition to the worm wheel which records up to 100 revolutions, there is a smaller wheel having 10 notches which engages the larger, and each revolution of the large wheel records one notch on the small, making capacity of machine 1,000 revolutions. This instrument is being introduced by Church & Sleight, 109 Fulton street, New York.

## THE HISTORY OF TIN-PLATE MANUFACTURE.

The origin of the manufacture of tin plates has not found its way into the pages of written history, says the *Colliery Guardian*. The only traces we have of its birth are that it was known to be existent in Germany previous to the beginning of the seventeenth century. Antiquity, however, reveals the knowledge by certain discoveries, that tinned vessels were used as early as the days of Pliny (23 A. D.). The tin, most of which came from the Cornish mines, was transported by the Phœnicians to southern Europe and the East, where it was utilized for the coating of iron and other purposes. The process of tinning was, however, a much more tedious affair than is now in vogue, and therefore the supply was slow and restricted. Up to the first half of the seventeenth century the manufacture of this ware was confined principally to Germany, but in the reign of Louis XIV. it was commenced in France, under the supervision of the great Colbert, though it struggled on there for only a few years.

About this time the English iron trade, then in its infancy, was suffering from the importations from Continental countries. The price of tin had greatly fallen to nearly half its original price, and the miners were in great distress. It was in the midst of this depressed state that the process of tin-plate manufacture was instituted on the English soil, South Wales being the district chosen for its inception. Through the dishonesty of one who had been granted a patent for its production, and who was totally unable to carry out the work, the industry languished and failed, and not again until 1720 was an endeavor made to reorganize the works. From this time onward we find that great additions and improvements were made in the method of manufacture. Two of the most important epochs in the tin-plate industry are the introduction of Siemens steel (1875) and the adaptation of Bessemer steel (1886).

An evidence of the great growth of this industry when once fairly founded in England is shown by the increase in the number of works erected for the purpose. In 1750 there were only four works in existence; fifty years later nine was the total at work. In 1850 there were thirty-four; in 1860, forty; in 1870, fifty-nine; and in 1885 there were ninety-six.

## PROMINENT MEN IN THE MINING INDUSTRY.

### Albert A. Blow.

Mr. Albert A. Blow, one of the most prominent of the younger mining engineers of the United States, was born in Norfolk, Va., in August, 1858. He studied civil and mining engineering at the Virginia Military Institute at Lexington, Va., graduating in 1877, and at once became engaged in the practice of his profession, being employed upon railroad location and construction work during 1877 and a portion of 1878. He was then offered a position as assistant professor of mathematics in the Virginia Military Institute, but declined in order to accept that of assistant engineer in the Engineer Corps, U. S. A., under Capt. Chas. B. Phillips, with whom he was engaged in the hydrographic surveys of Currituck and Albemarle sounds, and the rivers tributary thereto, serving with this corps until 1879.

Attracted by the accounts of the Leadville bonanzas, which by that time had been proved to be of wonderful richness and magnitude, Mr. Blow determined to go to the scene of the new excitement, and left Virginia in the autumn of 1879. Arriving in Leadville, he immediately engaged in mine surveying and general engineering work, being a member successively of the engineering firms, Page, Nichols & Co., Darby, Page & Co., and Page & Blow, all well known in Leadville, Aspen and the mining districts in that vicinity. Mr. Blow was engaged in this work for six years, practicing his profession in nearly all of the principal mining camps of Colorado, as well as in other Western States and old Mexico.

In 1885, Mr. Blow became general manager of the Silver Cord Combination Mining Company, which position, together with that of general manager of the Mike & Starr Gold and Silver Mining Company, he still holds. In his successful direction of the affairs of these companies Mr. Blow has proved himself to be a mining engineer of great ability. At the time when he assumed the management of the Silver Cord mines the ore bodies from which they had made their large production in the early days of Leadville were practically exhausted, and the company had ceased paying dividends two years previously. Mr. Blow, who had devoted himself especially to the study of the geology of the Leadville ore deposits, almost from the time of his arrival in the camp, laid out a new scheme of exploration work for the company, with the purpose of cutting other ore chutes which in his opinion crossed portions of its territory up to that time unexplored. Accumulating the necessary working capital by mining, with exceptional economy, the small amount of ore left in the old stopes and in the small tributary ore bodies which he opened, he carried out his more important plans with the result that the company was again enabled to declare dividends.

ALBERT A. BLOW.

The Silver Cord Company is now engaged in carrying out another of Mr. Blow's plans—driving a large double-track tunnel from California gulch, under Iron and Breece hills, to develop, drain, and work the low-grade ores of these localities at minimum cost. At the mouth of the tunnel large dressing works are being erected, the necessary amount of water, lack of which has hitherto prevented ore dressing upon a large scale in this locality, having been secured by an extensive system of ditches and flumes. This is undoubtedly the most important improvement now being undertaken among the mines of Leadville, as upon the success with which the low-grade ores can be dressed depends almost entirely the future importance of this mining center.

Mr. Blow is one of the trustees of the Colorado State School of Mines, and a member of the Colorado Scientific Society and the American Institute of Mining Engineers, to the transactions of which body he has been a valuable contributor. His geological work in Leadville, the results of which have been embodied in "Geology and Ore Deposits of Iron Hill" and other papers, has been of the greatest practical value, forming an important supplement to the earlier work of Prof. Emmons.

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**For "native negro s,"** in the article on "Dust from Roasting Furnaces," in THE ENGINEERING AND MINING JOURNAL of July 11th, read *natives*. There are but few negroes in Spanish Honduras. The word negroes was inserted inadvertently.

## AN INCREASING DEMAND FOR GRAPHITE.

The successful experiments which have been made in the use of graphite as a lining for converting vessels, it being a material specially adapted to withstand the cutting action of the acid slag, has brought about a scarcity in the supply of old crucibles, and bids fair to open a new market for burned graphite, says the *American Manufacturer*. Old crucibles which could be had a year ago at $1 per ton cannot now be obtained in any quantity for $10 per ton.

The present supply of graphite for use in making crucibles for steel making comes from Ceylon. Elaborate experiments have been made with the plumbago mined in the United States, in the hope of making crucibles for this purpose therefrom, but so far with but indifferent success, or, at the most, with less success than with the imported article, nor has it been possible to sell the home product so cheaply.

Within the last year the price of plumbago delivered in New York has advanced nearly 60%, due primarily to two causes—the quantity mined has fallen off, and the demand, especially outside the United States, has increased. The total amount of plumbago exported from Ceylon for the year ending June 1, 1890, was 161,874 cwt. For the year ending June 1, 1891, it was 148 043 cwt., a falling off of over 8%. At one time three-fourths of the entire product of the island came to the United States, but at present this country does not receive one-half, and the proportion that it does receive is on the decrease. In the year ending June 1, 1890, 68,726 cwt. of Ceylon graphite came to America, and in the year ending June 1, 1891, only 35,936 cwt.

Germany is becoming a large factor in the trade in the matter of consumption, its increased use by the Krupp works being responsible for this. The imports of Germany for the year ending June 1, 1889, amounted to only 3,094 cwt. In 1890 it was 14,215 cwt. and in 1891 about 11,000. The falling off noted from 1890 to 1891 was about proportionate to that in the output, and not due to any lack of demand on the part of that country. During the fiscal years of 1890 and 1891 the imports of graphite in England amounted to 61,949 cwt. and 57,906 cwt. respectively.

The price of plumbago varies according to its quality. It is divided into four grades, viz., large lump, ordinary lump, chip and dust. The present ruling figures are as follows: Lump (ordinary), $4.50 to $5 per cwt.; chip, $3.60 to $4; dust, $2.80 to $3.50. There is a very great scarcity of good plumbago in the market to-day, and no cargoes of any consequence are expected in this country before September 1st.

The quality of plumbago depends as much upon its physical structure as upon its chemical analysis. There is a deposit of this mineral near Reading, Pa., which in analysis is practically identical with the best Ceylon article, yet the best efforts of crucible makers have failed to produce crucibles therefrom equal to those of the Ceylon graphite.

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**Testing Firearms in Europe.**—There are in Europe five "proving houses" or testing places for firearms. Of the Birmingham and London proof-houses many people have heard; the others are at St. Etienne, in the south of France; at Fellah, in Austria, and at Liege, in Belgium. The latter, however, is by far the largest establishment of its kind. It is officially stated that the Liege proof-house now consumes between 3,000,000 and 4,000,000 of cartridges and over 40 tons of gunpowder a year.

**Peruvian Petroleum.**—The refined kerosene manufactured by the London & Pacific Petroleum Company at Talara, near Paita, in northern Peru, has entirely displaced the American article in Lima, according to a recent consular report. The first shipment from Talara was made in December, 1889, and now almost the whole west coast of South America is supplied with the Peruvian article. The London & Pacific Company is rapidly increasing its manufacturing capacity, besides extending its shipping facilities by the purchase of more steamers. Besides the London & Pacific Company, and another concern operating at Zonitos, near Talara, three new companies have been organized in London since January 1st, 1891, with large capital, for the purpose of working the petroleum beds between Paita and Tumbez. The Peruvian oil fields are said to cover an extent of 7,500 square miles.

## SAFETY IN COAL MINING.

Last winter, when the explosion occurred in the Mammoth mine, Westmoreland County, Pa. (ENGINEERING AND MINING JOURNAL, February 7th, 1891), the Pittsburg *Times* offered a prize of $100 for the best suggestions for prevention of mine disasters. The committee appointed to judge the papers submitted was composed of Messrs. M. P. Kane, John F. Farrell, and Thomas Lynch, whose names are well known throughout the bituminous coalfields of western Pennsylvania. There were 272 contestants for the prize, which was awarded on the 9th inst. to Mr. Austin King, of Houtzdale, Pa., his suggestions being the best in the opinion of the judges, considered from point of "cheapness, certainty, and practicability." Mr. King's suggestions are as follows:

The services of a superintendent and of a mine boss should be secured, both of whom should have a practical and theoretical knowledge of mining in all the phases likely to be presented or circumstances likely to occur in the particular coalfield operated in; they should also be men of integrity, sobriety, tact, and executive ability, to enable them to manage successfully any difficulty that might arise in the operation of the mines, whether one of engineering of mines—other than professional work—or one of dealing with men and enforcing obedience to such rules and regulations as the best practice and theory suggest for the safety of men and property. The superintendent should be a man of attainments, superior to those of the mining boss, so that should an unusual occurrence arise in the mine the latter could, if unable to cope with it alone, seek the superintendent's counsel and implicitly rely on his judgment when giving instructions.

The mine boss in a gaseous mine should pay special attention to the reports of the fire bosses, and note in his travels through the workings whether the places show evidence of the regular visits of the fire boss whose duty it is to examine them daily. He should also give particular attention to any violations, by those under him, of the regulations or laws governing the working of the mine, and administer for such violations the penalties as prescribed by the mine rules or, in the absence of such provision, as recommended by the superintendent or mine inspector of the district. He should be unceasing in his vigilance and endeavor to foresee any possible danger, and thus be prepared to prevent rather than remedy the evil.

### ACCIDENTS IN SHAFTS.

Accidents in shafts should be guarded against by the use of the different safety appliances now prescribed by law, such as (1) safety gates at top landings, safety catches and good overhead cover on cages, good ropes and chains; (2) timbering shaft from top to bottom with timber of suitable size, strength, and durability; (3) a reversible fan for ventilating purposes and making the hoisting shaft the upcast, so that ice may not form in it; if ice forms in downcast or fan shaft, the fan can be reversed long enough to thaw it out; (4) careful daily examination of hoisting machinery and of ropes, and shortening the latter at proper intervals so as to remove that part of rope bearing most strain, because resting on the pulley, and daily examination of clevises and bridal chains and the annealing of same at proper intervals; (5) prohibiting the carrying of mining tools on cages by persons ascending or descending; the construction of safety blocks so arranged that cars cannot be pushed into shaft accidentally; (7) keeping copy of code of signals printed in large type in engine-room and top and bottom of shaft, and so placed as to be always in full view of persons required to use them, and employing no person at top or bottom of shaft not understanding English "as she is spoke"; (8) refusing to employ any persons as hoisting engineer unless well and favorably known; and (9) using an automatic steam brake on winding drum, safety hooks and catches fixed to head frame to prevent overwinding.

### ACCIDENTS IN SLOPES.

There are but few slopes in bituminous coal mines of Pennsylvania through which persons are lowered or hoisted, but where this is done there should be (1) the same careful examination of ropes and chains and hoisting machinery as suggested for shafts; (2) persons should be carefully lowered and raised and the tracks should be kept clean and in good order; (3) roof and timbers should be regularly and properly inspected by mine boss; (4) whitewashed shelter holes, not exceeding 30 ft. apart, should be provided for the use of those whose labor requires their presence on the slope; and (5) the same precautions as to signals and safety blocks should be adopted as at shafts. Where persons are not lowered into or hoisted out of slope mines a separate traveling way should be provided, which should be well drained and free from all steam or discharge pipes.

### ACCIDENTS IN DRIFT OPENINGS.

Accidents in drift openings may be guarded against (1) by compulsory inspection of roof and sides in all hauling roads and pillars if known to be weak—at least three times a week; (2) by provision of a separate traveling way where hauling is done by machinery or inclined planes are used; where this is not feasible, whitewashed shelter holes should be provided every 30 ft.; where mules or horses are used for hauling purposes shelter holes should be provided at distances not exceeding 60 ft. apart; the shelter holes in both cases to be made in the rib regardless of the distance of the rib from the track; and (3) by prohibition of the use of a steam locomotive in places used by persons to travel into or out of a mine.

Having gone over the accidents likely to occur to persons going into or out of the mine, we will now consider the dangers to which persons are exposed when working in mines, and which, for our purpose, may be generally classed under six heads, namely: (1) Falls of roof and coal; (2) mine wagons; (3) explosions of firedamp; (4) miscellaneous causes; (5) explosions of coal dust; (6) drowning.

A list of fatal accidents which have occurred in the bituminous coal mines of Pennsylvania, and which was compiled from the reports of the inspector of mines for the years 1884 to 1889 inclusive, is here given to assist in forming a correct idea regarding their number and causes.

| | No. | |
|---|---|---|
| Falls of roof and coal | 340 | 64.2% |
| Mine wagons | 74 | 14.1% |
| Firedamp explosions | 51 | 9.7% |
| Miscellaneous causes | 46 | 8.7% |
| Dust explosions | 17 | 3.2% |
| Total | 528 | 99.9% |

If we only take the accidents that happened in districts in which firedamp is generated, and also leave out the number killed at the Kettle Creek explosion, which was attributed to coal dust, the list will appear as follows:

| | No. | |
|---|---|---|
| Falls of roof and coal | 227 | 61.68% |
| Mine wagons | 56 | 15.22% |
| Firedamp explosions | 51 | 13.84% |
| Miscellaneous causes | 34 | 9.24% |
| Total | 368 | 99.98% |

### FIREDAMP EXPLOSIONS.

We will consider first the explosions of firedamp in mines, because this form of accident is particularly dreaded on account of its fatal character. The cause of firedamp explosions, or explosions of any kind, should receive greater attention and consideration than any other, for the reason that, no matter how intelligent, careful, or circumspect a man or number of men may be who work in a mine generating explosive gases in sufficient quantities during working hours in working places, roads, and airways to be ignitable, they are always likely to be the victims of some foolish or overt act that will cost them their lives; and as the strength of the weakest link in a chain measures the strength of the whole chain, so their safety is measured by the probable misconduct of some ignorant, vicious, or semi-idiotic person who cannot realize the awful consequences of his misbehavior.

To avoid such disasters (1) ample means of ventilation should be furnished, preferably in the form of a fan, which should be placed at a safe and convenient point; (2) the work should be laid off in separate ventilation districts, and each district should have a separate current of air and a separate return therefrom to bottom of upcast, said return to be maintained solely for that purpose and only to be traveled in by mine officials for inspection purposes; the objects attainable by this method of ventilation are to increase the total volume of air circulating in mine to insure purity of air current (as far as practicable) on its entrance to each particular district and to limit the extent of an explosion, should one occur afterward; (3) the overcast or air bridges should be constructed in the natural strata if the material is suitable for this work; if too expensive to construct in this way, they should be made of iron in segments of a known or calculated strength so as to resist being collapsed or blown out in case of an explosion; (4) no crosscuts should be made in main heading pillars or boundary pillars of a ventilation district, except where necessary for hauling purposes; the headings should be aired as they advance from crossheading to crossheading, or from flat to flat, by means of incombustible brattice put up for that purpose. This precaution would greatly reduce the number of stoppings to be maintained airtight, or to be blown out in case of an explosion, and would thus greatly facilitate a rescue. By a judicious use of this brattice in cross or flat headings the number of stoppings in them would be reduced one-half or more, at little or no extra cost where pillars are large and yardage is paid for crosscuts.

Next, the service of one or more fire bosses should be secured, who should have a good practical knowledge of mine gases, especially of fire damp, and know their composition and specific gravities in order to be able to know where, under ordinary circumstances, to look for them, and to form a good idea of the amount of air required to dilute any explosive gases that might be encountered in the daily examination; he should be acquainted with the method of ventilation used in the mine and the direction of and distance traveled by any explosive gases that might be generated in his examination district or in the mine. He should be a total abstainer from all intoxicating drink, should not be shortsighted or color blind, and should be cool and courageous under all circumstances connected with his duties.

### SAFETY LAMPS.

The fire boss should be provided with a type of safety lamp that combines sensitiveness in testing with the quality of resisting the passage of flame through the gauze in currents of high velocities. It should also be provided with a shut-off to aid in extinguishing the flame should a large body of gas be suddenly encountered. There should also be a small key fixed to side of safety lamp, near the top, to unlock a registering device fixed to roof of working places. This device, which could be fastened to a wooden plug driven into a small hole in the roof, would consist of an ordinary clock face, say 4 in. in diameter, with an outer circle marked with numbers from 1 to 31 inclusive for indicating days of the month. This would enable the workman when entering his room or heading to see that the fire boss had been there (the cover of the register being open) from the position of the pointers on the dial. The dial should always be placed in the highest point practicable in the working place, giving the miner absolute proof that the fire boss' safety lamp had been in such a position that if any gas were near the roof he could not help seeing it. This device could be moved forward as the work advanced, according as the coal seam inclined or the condition of the roof suggested. The fire boss could, under ordinary circumstances, make the examination and fix figures of dial in 30 seconds. He should not be required to travel between the places to be examined faster than two miles per hour. After an examination of the working places and also of those not worked in for the time being that are in any way contiguous to them or are ventilated by any air current that may afterward pass in any place that may be worked or traveled in by workmen in the mine, and all has been found safe, the fire boss should remain at the "station," and should see that no lamp passed him that did not satisfy him as to its safety.

No men should be hired to work in a mine generating explosive gases who do not possess some practical knowledge of the use of the safety lamp. If necessary to employ men without this practical knowledge, pains should be taken to explain to them the reason why the light is so guarded, and to impress on their minds the great danger of tampering in any way with the lamp, and the awful things that might happen to themselves and fellow-workmen if the lamp were handled or damaged in such a way as to make the passing of the flame through the gauze possible, and also to show them how to shield their lamp in air traveling at a high velocity. The lamps should be examined and tested before being given out to the workmen to enter the mine, and should be able to withstand safely a strong current of air and at the same time give a light equal to the Clanny. No common Davy, Clanny, or Stephenson (Geordie) lamp, or lamps of like character should be allowed to be taken into the mine, because they have been proved again and again to be unsafe and

unreliable. Blasting should also be prohibited in any portion of the mine where firedamp exists or is likely to be liberated by the blast, or in the vicinity of gobs and falls not easily accessible to examination for the detection of gas, or where coal dust is deposited in any material quantity on the floor and sides, as the flame of the shot might be propagated by it into inaccessible portions of the mine. Tamping shots with coal should also be prohibited for the same reason. The laws forbidding the taking of matches, fuse, tobacco pipes, or any combustible material into mines where safety lamps are used; the propping open of or doing damage to any door, regulator, or overcast used to direct the air currents in the mine: tampering in any way with any safety lamp; removing danger signals, etc., should be fearlessly and rigidly enforced.

ACCIDENTS BY FALLS OF ROOF.

The best preventives of accidents of this class are to (1) employ special or selected men known for the care exercised by them in their daily work, to work, or timber places where the roof is "full" of slips, seams, or cracks; (2) to provide ample and suitable timber, proper caps and collars, to be delivered on short notice to the place where required; (3) to compel workmen by rigid enforcement of rules to set their timber properly, and keep it propped sufficiently close to the face of working place to secure safety under all ordinary circumstances, and to withdraw the workmen from the place if it shows signs of any approaching cave-in; (4) where drawing props is a necessity, either for economical reasons or to avoid squeezes or creeps, the work should be performed by one thoroughly acquainted with its character and the nature of the roof. He should be provided with a "timber bar" and chain to draw posts in very dangerous positions.

ACCIDENTS BY FALLS OF COAL.

The accidents under this head may be prevented very materially (1) by increased vigilance on the part of the miner in looking for smooths, slips, and crevices in the coal. Where undercutting is required (2) coal-cutting machinery should be put in to perform that work. If this could be done in all coal seams the accidents under this head would be reduced fully 80%. Where machinery cannot with profit be so used, miners should be compelled to set sprags to coal face at a distance not exceeding 7 ft. apart, whether apparently necessary or not, and the mine boss or mine inspector, if able to prove negligence in this respect (or in properly posting and securing the working place), should make complaint at once to the nearest justice of the peace, who should be given jurisdiction in such cases, with power to fine in the sum of from $5 to $25; the fines so paid to be turned over to the miners' hospital fund of the district in which the misdemeanor was committed. Observation shows that adout 50% of the accidents from falls are owing to carelessness or indifference on the part of the persons injured.

ACCIDENTS FROM MINE WAGONS.

These may be very largely prevented by putting into practice the suggestions made with reference to drift openings, together with the provision (where condition of roof will permit) that the headings or hauling roads be made so wide, that with tracks placed to one side of center there will be from 2 to 3 ft. of space between the loaded cars and one side of heading all along. The hauling roads should always be made wide enough to allow a driver to pass safely a moving train of cars, to put on or take off brakes, or for the use of sprags where the grade requires it; then, the roads being properly cleaned and well drained, there would be little or no inducement to ride on or between cars. No person should be permitted to ride on cars on any incline unless special provisions have been made for that purpose.

DEATHS FROM DROWNING.

Deaths from drowning by holing into old or abandoned workings containing large bodies of water have fortunately been small in number, but the danger is a fast increasing one from the fact that mines are being worked deeper each succeeding year, and that lakes of water, many acres in extent, surround some coal properties and overlie others. This is all the more alarming when it is considered that in many cases no maps of these water-filled workings are to be had, and that the accuracy of many maps that have been preserved cannot be relied upon, because there is good reason to believe that in many cases working places have been advanced more or less after the survey, or perhaps some portion filled with water at the time has not been put on the map at all. To provide against disasters a large margin should be allowed for the correctness of the maps of old workings that contain either water or gas in dangerous quantities. A law should also be enacted compelling mining engineers and mine surveyors to sign and date maps or portions of maps made by them, after their surveys, and holding them responsible for any loss of life or property occasioned by any defects or inaccuracies in their work.

ACCIDENTS FROM DUST EXPLOSIONS.

Coal dust is a comparatively newly discovered or newly demonstrated source of danger in collieries. It was the chief agent of destruction in the Kettle Creek explosion, and in that case the mining world was furnished the best proof of its deadly character when once raised and ignited. No firedamp had ever been seen before the explosion at that mine, which had only been opened a few months and had a score or more of working places, nor has any been seen there since. That coal dust caused the death of a large number of persons at Mammoth was everywhere apparent to the rescuers, and to the experts who visited the scene afterward. This source of danger is present in all dry or partially dry mines, and should be guarded against by the prohibition of blasting in localities where dust has accumulated in dangerous quantities, until the dust has been removed and the place and vicinity thoroughly moistened by sprinkling water. Sprinkling should also be practiced on roads where dust accumulates.

MINE FIRES.

These may be prevented by prohibiting naked lights from being taken into stable or feed rooms or where timber is very tinder-like; by keeping pump rooms and cabins in pits clear of all oily waste; and where cars are oiled at bottom of pit, by using some absorbent, clearing the floors from time to time and scattering fresh absorbents. Sand or gravel is suitable for this purpose. Where a place is in danger of being set on fire from ignition of gas blowers by shots—as near clay veins, for example—holes should be drilled ahead and the gas allowed to drain off. If the necessity of driving the heading will not permit this delay, the place should be driven through the danger point by picks. Only such brattice as is incombustible should be allowed to be used in mines.

NATURAL-GAS PIPE LINES.

The location of these lines should be accurately determined and platted on maps of mines over which they pass. The strata under them should be left intact by leaving ample pillars of coal for support.

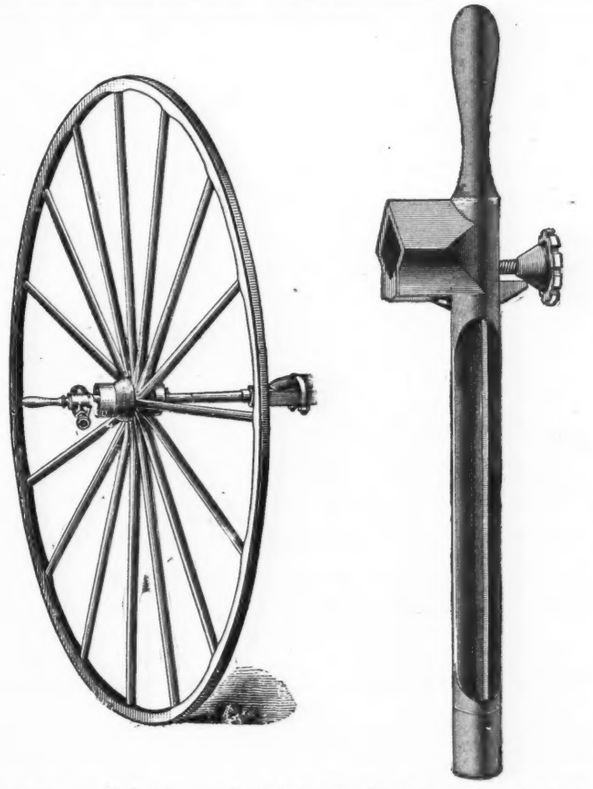
OIL AND GAS WELLS.

The General Assembly should authorize the appointment of a competent corps of engineers to survey and accurately locate the position of all oil, gas, or salt wells that have been drilled in the coal measures of the State as far as can be ascertained from deeds, leases, or information gathered from other sources. The maps should be drawn to a scale not exceeding 400 ft. to 1 in. and they should be deposited as public documents with the recorder of the respective counties represented on them, so that ready reference might be made to them at any time. Mine managers could thus guard against striking the wells unawares and prevent the mine from being deluged by water or gas.

In conclusion I would say that the greatest preventive of accidents in mines is the use of ordinary caution on the part of workmen, and the rigid enforcement of rules and the infliction of due punishment by the mine officials. This last may seem harsh, but my experience of 30 years in mines only serves to strengthen my opinion as to its necessity. It is much better to suspend or discharge a man for violation of rules providing for his safety than to carry him home on a stretcher crippled perhaps for life or dead. The operator, too, should give his subordinate officials a standing order to do all possible to avoid accidents, and see that the mines are well ventilated. When not entirely taken up with other business he should visit the mines in person, enter them, and see that his workmen are cared for as he desires they should be.

## THE SPARTAN WRENCH AND CARRIAGE JACK.

The accompanying illustration shows application of Spartan Jack, manufactured by the Patent Development Company, of New York. The wrench socket is applied to nut, the set screw tightened, and by turning the jack, nut is removed and remains in wrench. The hollow end of wrench is threaded to fit on axle, and when applied makes



simply an extended axle. A slight lift on the handle and the wheel may be slipped from the axle to the jack and then set down, the wheel holding the wagon as though on the axle itself, and if the wagon moves the wheel will turn on jack. The axle oiled, the wheel is slipped back in place, jack unscrewed, and nut applied without soiling the hands, removing the wheel, or laying down the nut.

**The Telephone in Mining Operations.**—A portable telephonic apparatus for use in coal and other mines has been devised by M. Berthon. It consists of an oak box with handles. The box contains a magnet in connection, a "call" arrangement, an alarm bell, an induction coil, switch for the microphone battery, three cells in ebony cases, terminals for making connection with a wire conductor, and the well-known Berthon-Ader apparatus. The whole is placed in a leather case provided with straps for convenience in carrying. With a well-insulated conductor carried down the shaft, and with the employment of "flying" or portable wire, communication with those on the surface is possible with the Berthon apparatus for any part of a mine.

## METHODS OF WORKING AND SURVEYING THE MINES OF THE LONGDALE IRON COMPANY, VIRGINIA.*

By Guy R. Johnson, Longdale, Va.

In view of the attention now directed to the development of the iron ores of Virginia, it is presumed that a brief account of the methods of working and surveying these mines will be of interest. For a better understanding of such a description a few words will be said concerning the geological character of the ore deposit.

Professor Rogers says in his preliminary report of 1835 that this deposit has "more of the character of a true vein than is usually the case with ores of this sort." According to the (now generally accepted) views of the same authority, the Oriskany sandstone (No. VII. of Rogers' classification) has here been replaced with brown hematite ore. Underlying the ore the Lower Helderberg limestone should be, and is occasionally, found as the foot-wall. Generally, however, the limestone has been replaced with a highly siliceous clay, which often runs into sandstone. Overlying the ore, and forming the hanging wall, is the Devonian shale (No. VIII. of Rogers, the Hamilton slate of New York). This formation is encountered in great thickness, one tunnel having been driven upward of 1,200 ft. through it to reach the ore. Near the ore its character changes. It becomes so much softer as to be cut readily with a knife, while the color changes to blue, red, yellow or white. Combinations of all four colors are also often met. Upon exposure to the air it swells and crumbles into fine particles, the swelling often being accompanied by the breaking down of one or more sets of timbers in the mine.

The strike of the vein may be said to be that of the mountains, about N. 45° E., while the dip may be anything from zero to 90° in the same mine and within limits a few hundred feet apart. The general dip-direction is southeasterly. The ore crops along a distance of about 1½ miles, and has been opened in many places. Most of these workings, however, were open cuts, and have long been abandoned, the ore-supply being drawn at the present writing from two principal mines, situated, roughly speaking, at each end of the deposit, the one at the lower (S. W.) end being much the larger.

As the system of working and surveying both mines is the same its application to the lower mine only will be described.

When mining was begun at this point, the outcrop was 500 ft. above the creek level, and was for many years worked entirely by open cuts. As time went on, however, the excavation was carried so deep (130 ft. that the cover grew too heavy, and it became necessary to obtain the ore by underground workings. It was finally decided to stope the ore from the top down. This plan was adopted in 1881, and has been followed ever since with complete success.

### METHOD OF OPENING THE GROUND.

The method of attack is to sink a test-shaft upon the ore to the depth at which it is desired to drive an adit.

The line of least distance from the surface to the ore at the level chosen (the length of which line is obviously largely governed by the height of the "lift" to be secured) is then determined, and the adit is driven straight in, through the overlying shale, to the ore, a distance varying from 300 to 1,200 ft., according to the height above the creek at which the adit is driven. In Fig. 1, which illustrates the general method, the adits are represented, for the sake of clearness, as though driven in upon the same vertical plane at different levels, while in reality their entrances are from one-half mile to a mile apart, and their directions are not parallel. The highest adit was driven directly upon the ore from the bottom of a ravine which cut across the vein. Its level is indicated by a broken line in the drawing, the adit itself only showing in such a projection to the extent of its shaded cross-section at *S*. The shortest adit (300 ft.) mentioned above is not shown in Fig. 1, as it was of secondary importance and was not used long.

On reaching the ore, the adit is continued by galleries in both directions, following the bends of the vein These, it may be remarked, are both many and sharp, many of the sights taken during the survey of the mine being 16 to 20 ft. only in length. Parallel with the main entry or car-level an air-way is driven at a height of 20 ft. from the bottom of the main entry at the bottom of the air-way. As the main entries are 6 ft. high, this leaves a pillar of ore 14 ft. thick between the two levels. At intervals of about 120 ft. on the car-level, chutes or winzes are driven up through this pillar to the air-way. These chutes are supplied with spouts and gates for loading the mine cars. Twenty feet beyond each chute, in the direction of the heading, a second passage, called the man-way, is driven up, to afford means of ascent for the men who are working above.

As the air-way is always connected with the test-shaft above mentioned, this system affords very perfect means of ventilation. Of course, it is necessary to keep most of the chutes and man-ways nearest the mouth of the adit closed in order to force the incoming air to the headings. From the air-way the chutes and man-ways are driven up until they reach the surface in the bottom of the old open-cut workings. This, however, is not all done at once, but only as needed for the working of the mine.

At every 10 ft. of vertical height above the air-way a lateral level 5 ft. high is driven off along the ore, thus leaving a 5-ft. pillar under each drift.

### METHOD OF WINNING THE ORE.

When the open-cut workings, mentioned above, were about to be finally abandoned, a grillage of small poles was laid down in the manner indicated in Fig. 4. This formed a floor resting upon the ore in the bottom of the cut.

Outside working was then discontinued, and the sides were suffered to fall in upon the grillage, after which the mines were ready for underground working. The system is as follows:

The pillar of ore over the highest level, or, in other words, the ore left in the bottom of the old cut, is first attacked and taken out, the roof being supported during this operation by heavy props set up a short distance back of the working-face, under the grillage mentioned above, and standing upon a similar grillage placed upon the ore under foot. (Where the vein is horizontal, or nearly so, the lower grillage may be omitted, the roof being allowed to fall directly upon the floor, which, in such cases, is the foot-wall.) This row of posts supports the roof until the ore has been taken out for a short distance ahead of them, when a second series is set up in similar manner.

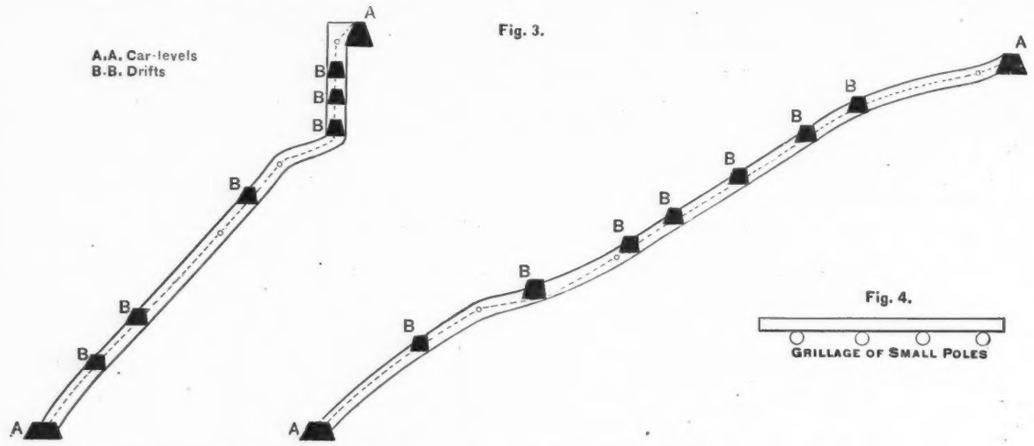



Fig. 3.

VERTICAL PROJECTIONS OF TWO CROSS-SECTIONS ON CHUTES OF THE LONGDALE MINE.
Scale 1 in.=50 ft.




Fig. 4.

It is customary with us not to leave the roof standing, even if the props are strong enough to support it for some time, but to cause it to fall, by either "shooting out" the props (*i. e.*, breaking them down by means of dynamite) or by drawing them out if they can be saved.

The ore that comes from the face is wheeled to nearest chute, into which it is dumped. After the top pillar has been robbed for a few feet, generally from 10 to 20, the next one below is attacked in the same way. Every level in the mine can thus be worked simultaneously, the workings resembling a series of 10-ft. steps, as shown in Fig. 2, which is a vertical elevation of a part of the mine.

In this figure the shaded portion represents that part of the mine which has been stoped, the remainder being ground opened for mining but not yet stoped. The construction of a cheap floor or grillage of poles is repeated on every level to prevent the sliding of the waste from old caved stopes above. This floor is of course not removed after serving its temporary but important purpose.

The ore dumped into the chute descends by gravity to the car-level, unless it is stopped by meeting a flat place or "bench" in the vein and consequently in the chute. When this occurs of course a rehandling becomes necessary, which is carried out in the manner best suited to the circumstances. As the ore finally arrives at the car-level it is drawn into mine cars, hauled to daylight, and dumped upon a horizontal screen of round iron bars, which is set in the top of the ore bin beside the railroad. The fine ore falls through the screen into a pocket, while the lumps remaining upon the bars are further broken and sorted by hand and thrown into an adjoining pocket. From these pockets the ore is drawn into cars on the railroad leading to the furnaces, the lump ore being taken directly to the furnace bins, while the fine is conveyed to the washer.

### METHODS OF SURVEYING.

As will be seen from the foregoing description of the mining, surveying was no easy matter, for the mine was entered at four different levels and the entrances only of these four adits could be connected by level and transit lines. This left the inner ends "in air." It was necessary, therefore, to survey the four car-levels with transit and level, connect their entrances by an ordinary survey, and then find some way of surveying the intermediate workings, the chutes and their lateral levels, so that

* Presented at the Cleveland meeting of the American Institute of Mining Engineers, June, 1891.

the inner ends of the car-levels might be thereby connected and the accuracy of the work tested. The following method, adopted after thorough discussion, has given perfectly satisfactory results:

A base-line was laid down with special care and thoroughly marked for future reference. The bearing of the line was then taken, two instruments being used, to check the accuracy of the needles. Starting from this base-line the four entries were surveyed with the transit. The work was commenced in the lowest entry. The instrument having been set up and a back-sight taken to the next station behind the one over which the transit was placed, the telescope was revolved on its axis, the vernier screws were loosened, and the instrument turned on its vernier plate until the cross hairs bisected the light of the plummet lamp hanging over the station, of which the position was to be ascertained. The angle as indicated on the vernier was now read, noted and re-read, after which the bearing, as indicated by the needle, was noted. If this agreed fairly well* with the course as calculated, the assistant was sent back to the first-mentioned station, the vernier was unclamped, the telescope revolved on its axis and the instrument turned on the vernier plates until the flame was again bisected by the cross-hairs. If the vernier then stood at zero I was reasonably sure that no error had been made in the angle. The reason for always resetting the instrument to zero was that it was an old-fashioned, flat-centered transit, with vernier-divided into four arcs of 90° each.

The angle and bearings having been taken as described, the length of the sight was measured with a steel tape, position of chutes and manways being noted. The plummet lamp used in this work is of the kind invented by Mr. Eckley B. Coxe, of the Institute, and described by him in his paper upon "Surveying the Anthracite Mines at Drifton, Pa." (*Trans. A. I. M. E.*, I., 378.) The stations in the transit survey were marked with large tinned tacks set in the ties of the track. The ties were chosen rather than the caps because in these mines they are less apt to be disturbed by movements of the ground.

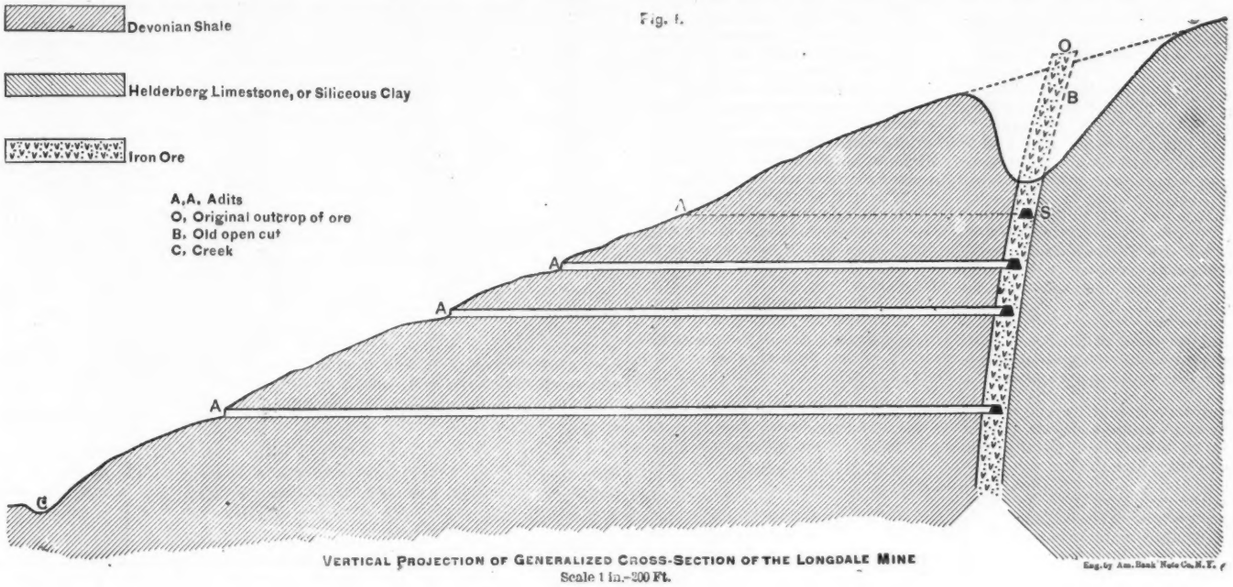
The sights averaged a little less than 3 to 100 ft. By using the above precautions several miles of underground leveling was accomplished, and in no case was the error, as determined by "checking back" all work, greater than one-tenth of a foot.

In this way the four main levels were surveyed, after which their entrances were connected by level and transit lines. The chutes and their lateral levels alone remained to be surveyed, in order to enable us to make a complete map and test the accuracy of the foregoing work. To do this with transit and level was out of the question, both on account of the roughness of the chutes and also because they were much too small. But the ore in this mine, being brown hematite and non-magnetic, permitted the use of the magnetic needle on all levels and in all chutes where there were no rails. It was accordingly decided to use a hanging compass in connection with a clinometer for this portion of the survey. After several trials the apparatus adopted for this purpose consisted of 100 ft. of strong linen line, about one-eighth of an inch in diameter, braided to prevent much stretching or twisting, and wrapped upon a light reel, which could be easily carried, a plummet, a hatchet and nails, and three strips of wood, respectively 4, 5 and 6 ft. long.

The survey of a chute was preferably begun at the bottom. The distance from the top of the rail to the nail in the cap or the lagging, left when the transit survey was made, was first noted. One end of the cord was then fastened to this rail, and the reel was carried forward, up through the chute, until the curving, either horizontally or vertically, of the chute caused the cord to diverge from the center line. One of the three wooden strips was then wedged tightly across the chute, or nailed, and the cord was attached thereto and drawn very taut. A brass clip was then fastened to the line to prevent the instruments from slipping to the bottom. The course and inclination were then taken by compass and clinometer and the distance measured along the cord, the position of levels passed being, of course, noted. If the latter had been cut through to the next chute, then the distance from center to center between the chutes was taken, as affording another check upon the work in the final plotting.

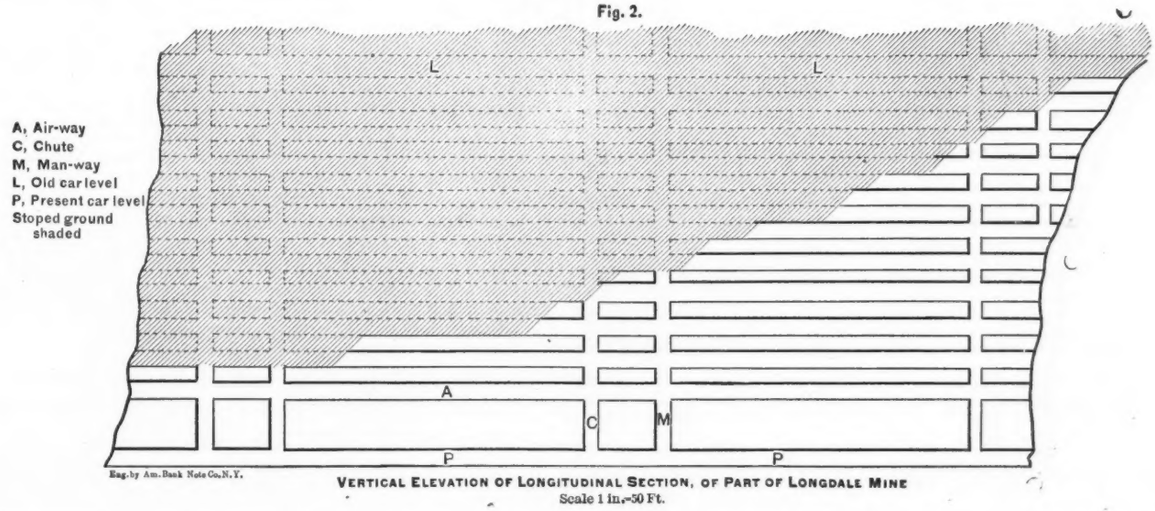
In case the chute was vertical, the plummet was used, and only the vertical measures in the chute needed to be taken. The drawings in Fig. 3 are vertical projections of two cross-sections on chutes in the mine, and

Fig. 1.




VERTICAL PROJECTION OF GENERALIZED CROSS-SECTION OF THE LONGDALE MINE
Scale 1 in.=200 Ft.

Fig. 2.




VERTICAL ELEVATION OF LONGITUDINAL SECTION, OF PART OF LONGDALE MINE
Scale 1 in.=50 Ft.

*Of course, the presence of the iron rails used in the car-levels renders the needle more or less unreliable. In this connection I would call attention to a somewhat curious experience in connection with the needle-bearings. Whenever the work was carried on in a dry section of the mine the needle seemed but little affected by the presence of the rails; but as soon as water was encountered in sufficient quantities to make the track muddy it became totally unreliable, variations of 5° being not uncommon. I was greatly puzzled by this, and finally became convinced that the water and mud, by making a perfect connection between the rails, permitted a greater degree of polarization and consequently increased the effect upon the needle.

give an idea of the varying slopes. The dotted lines represent the survey lines. The vertical distance from the top of the ore to the lowest level was 226 ft. A tunnel to take in another 120-ft. lift is now being driven, the ore having been tested to that depth, and is still going down.

Upon reaching the top of the chute, connection was made with the transit survey by fastening, in the last sight, the forward end of the cord to the nail left when the transit survey was made, in the line of the chute. By this means an accurate line of surveys was carried through each chute, the man-ways being located by offsets from the chutes, and it only remained to reduce the slant distances, as measured along the cord, to their vertical and horizontal values. This was done with a trigonometer, by the use of which a vast deal of calculation was avoided.

## THE DISTRIBUTION OF MANGANESE IN NORTH AMERICA.*—I.

Written for the Engineering and Mining Journal by R. A. F. Penrose, Jr., Ph. D., Little Rock, Ark.

Manganese has been found in many places in North America, but it has been profitably mined in only a few of them. At present Virginia, Georgia, Arkansas, and to a lesser degree Colorado, California, and the Canadian provinces of New Brunswick and Nova Scotia produce practically all the manganese ore mined in the United States and Canada. Vermont has in the past produced a considerable amount of manganese and manganiferous iron ores, but at present its mines are idle. Small quantities of manganese ore have also been mined in Pennsylvania, Tennessee, North and South Carolina, Missouri, Michigan, and Nevada, but the production of these States has been insignificant as compared with some of those mentioned above. Manganese occurs in the central Texas region, but no ore has been shipped. Manganese has also been found in Alabama, but no important deposits have yet been developed. Besides the United States and Canada, considerable quantities of ore occur in the eastern part of Cuba.

In tracing the manganese deposits of America from east to west the first encountered are those of Nova Scotia and New Brunswick. These are situated mostly in the water-shed of the Bay of Fundy, and occur in the marine limestone of the lower carboniferous series. Similar deposits also occur near Loch Lomond, in Cape Breton, while limited quantities of manganese were mined a number of years ago in rocks of Cambro-Silurian age at Tête à Gauche Falls, near Bathurst, in New Brunswick.

The first systematic manganese mining in Nova Scotia was done at the Tenny Cape mine, in Hants County, in 1862, and this work was soon followed in about 1864 by the opening of the Markhamville mine of New Brunswick under the management of Major A. Markham. The latter mine has from the beginning been the leading producer in Canada, and under the energetic and able management of Major Markham still supplies the larger part of the output of Canadian manganese.

In Vermont manganese mining was begun at several places before 1861, and limited quantities have been produced intermittently since then. Brandon and South Wallingford have been the principal centers of production, though certain quantities have also been obtained from Chittenden, Bennington, and elsewhere.

New York has never been a producer of any considerable quantity of manganese ore, while a few hundred tons from Pennsylvania, mostly from Lehigh County, would cover the production of that State.

The manganiferous zinc ores of Franklin and Sterling, N. J., have been used as a source of spiegeleisen since 1874. They are used primarily for the zinc they contain, after the extraction of which the residuum is treated as a manganese ore.

The principal manganese-producing region of the Atlantic States lies on the western slope of the Blue Ridge, between the Potomac River on the north and the headwaters of the Alabama River on the south. This belt includes the well-known mines of Virginia, Georgia, and other localities in the intermediate States. Most of the deposits of Virginia are in the valley of that name, though others are found in the New River and Cripple Creek region, and even still farther west, while small quantities of manganese ore have been mined along the lower part of the James River, in the coastal area. Geographically speaking, the deposits of the valley of Virginia are traceable southwestward through east Tennessee, the western parts of North and South Carolina, and into Georgia, where they culminate in the Cartersville region, in the northwestern part of the State.

The principal deposits in this Appalachian region occur in rocks of Cambrian and Silurian ages, as will be more fully discussed in a later article. Almost 200,000 tons have been produced in this belt since manganese mining was first begun, in 1837.

The manganese deposits of Arkansas occur in two different parts of the State; the only commercially important deposits, however, are in what is known as the Batesville region. This includes a territory of about 122 square miles, in which manganese occurs intermittently. It is situated in the valley of the White River, less than 100 miles north by east from Little Rock. Next to the Virginia and Georgia regions, the Batesville region has produced more manganese ore than any other locality in the United States—the total production having been between 30,000 and 35,000 tons. The ore occurs in Silurian limestone.

The other manganese-bearing area of Arkansas extends intermittently from Little Rock westward to Indian Territory, including Pulaski, Montgomery, Polk, and other counties, and comprising an area of over 100 miles in length and from 4 to 12 miles in width. Manganese has not been found in this belt in commercially important quantities, and not over 30 tons have been mined.

The manganese region of Missouri is in the Archean area, in the southeastern part of that State, about 125 miles north by east from the Batesville region of Arkansas. The ore has been worked to only a very limited extent, though small quantities have been taken out at the Culbertson bank, on Buford Hill, and elsewhere in Iron County. The deposits are in the same region as the celebrated Pilot Knob and Iron Mountain.

Northward from Missouri, up the valley of the Mississippi, no manganese ore of importance has been found, though small quantities have been obtained in mining iron ore at the Colby mine, Gogebic Range, Michigan. Several deposits have also been prospected in Marquette, St. Croix, and Dunn counties, in Wisconsin. Besides the manganese ore from the Colby mine, large quantities of manganiferous iron ore, containing from 2% to 11% manganese have, according to the articles of Mr. Jos. D. Weeks in the "Mineral Resources of the United States," for the last few years, been mined at the same place.

The manganese deposits of Texas are in the pre-Cambrian rocks of Mason, Llano, and San Saba Counties, in the centralpart of the State, over 200 miles northwest of the coast of the Gulf of Mexico. They are situated from 40 to 60 miles from railway transportation, and have only been partly prospected.

In the Rocky Mountains, ores available as a source of manganese have not yet been mined except in Colorado. Manganiferous silver ores occur in large quantities at Butte City, Montana; Leadville, Colorado; and Tombstone, Arizona; as well as at other places in the Rocky Mountains and in the arid region to the west. The manganese in them is of value in lead smelting, and is paid for accordingly at the various silver-lead smelting works, but it is generally too intimately associated with the silver to be used for other purposes without sacrificing the more valuable metal. Moreover, even if it could be used as a source of both metals, it is often too low grade to be a desirable source of manganese. At Leadville and vicinity, however, considerable quantities of manganese and manganiferous iron ores are obtained from the silver deposits. These are largely used as a flux in silver-lead smelting, but certain quantities are consumed as a source of spiegeleisen and ferro-manganese. According to the statistical bulletin by Mr. Jos. D. Weeks, just issued by the United States Census Bureau, 17,550 tons of manganiferous silver ores were produced in Colorado in the last census year, 1889.

West of the Rocky Mountains manganese has been found in the Humboldt Valley, three miles northeast of the settlement of Golconda, Nevada. The ore occurs in a pleistocene tufa deposited by the now extinct Lake Lahontan. It is of limited extent, and has supplied only a few tons of ore.

The most westerly manganese deposits of the United States are in the coast ranges of California. Though this State has never been prominent as a large producer of manganese, yet ever since 1867 it has supplied limited quantities, amounting altogether to probably between 5,000 and 10,000 tons. The principal deposits are in rocks of cretaceous age. In California, as in Virginia and Arkansas, one mine has produced almost all the manganese output of the State; in this case it is the Old Ladd or Corral Hollow mine in San Joaquin County, which was opened in 1867, and produced, up to 1875, 5,000 tons of ore, with a smaller output since that date. Other localities in California, such as Red Rock, Saucelito, etc., have been worked for manganese, and will be more fully described in a future paper.

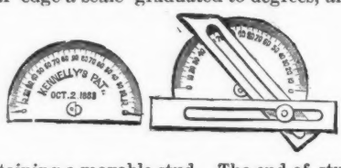
The manganese deposits of Cuba are in the eastern part of the island, to the north and west of Santiago de Cuba. There are three groups of deposits in this region, namely, the Christo to the north, and the Bayamo and Portillo groups to the west; the Christó has supplied all the ore shipped from the island. The principal mines in the Christo group are the Boston, Isabellita, Ponupo, Marguerita, and the Bosford, mentioned in the order of their importance, the Boston having afforded by far the the largest production. The total shipments from the port of Santiago—which represent the total shipments from all Cuba—up to March, 1891, were 27,051 tons.

Though the distribution of manganese in America is thus seen to be wide, the centers of large production are few. The total production of the United States in 1889 was 23,927 tons; of Canada probably between 1,000 and 2,000 tons; of Cuba, 848 tons.* Of the total for the United States the Crimora mine, of Virginia, produced over half, while the mines of the Cartersville region, of Georgia, and the Southern mine, of Arkansas, produced most of the rest; nearly all the production of Canada came from the Markhamville mine, of New Brunswick, while all that from Cuba was mined in the Christo group of mines north of Santiago de Cuba.

* Published by permission of J. C. Branner, Ph. D., State Geologist of Arkansas.

## KENNELLY'S PATENT PROTRACTOR.

The accompanying engraving shows a new protractor, at once simple and accurate, which is being introduced by Montgomery & Company, of New York. It consists simply of a semicircular plate having on circular edge a scale graduated to degrees, and having at the



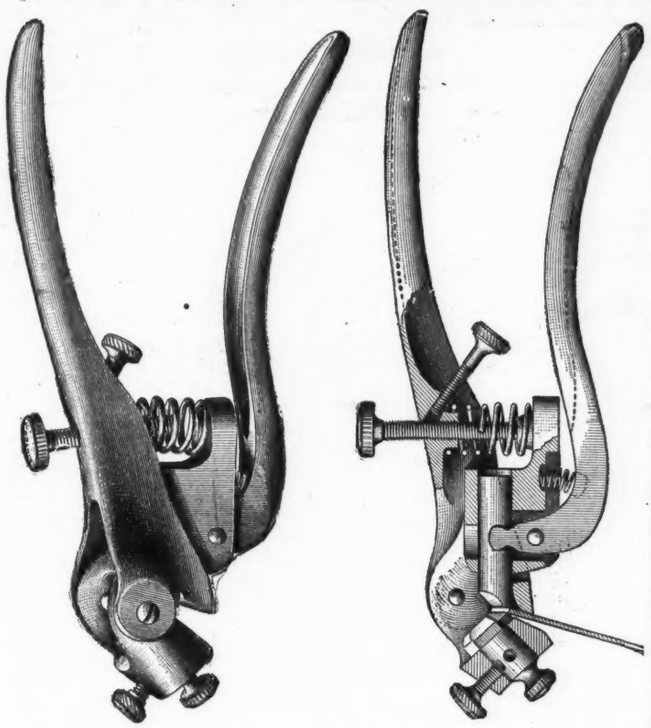

center a hole containing a movable stud. The end of stud is cut away to the exact center, and by applying edge of blade to the flat shoulder the blade will indicate the angle in degrees on edge. This tool may be used with any ordinary bevel square, and will not only enable setting square to any angle, but will truly indicate the angle at which a square is set when applied to it.

**The Speed of Electricity Through Telegraph Cables.**—The experiments undertaken at McGill College, Montreal, under the auspices of the British and Canadian governments, to ascertain the longitude of Montreal by direct observations from Greenwich, have led to interesting results concerning the length of time consumed in the passage of the electric current over telegraph cables. The experiments are thus described: "The first thing to determine was the length of time it took a telegraphic signal to cross the Atlantic. An automatic contrivance, whereby the land line could work into the cable, was provided, and a duplex circuit was arranged, so that the signal sent from Montreal would go over the land lines to Canso (Nova Scotia), thence over the cable to Waterville, Ireland, and return to Montreal again. Attached to the sending and receiving apparatus was a chronograph, which measured the time. Out of 200 signals sent, it was found that the average time taken to cross the Atlantic and back again—a distance of 8,000 miles—occupied a trifle over one second, the exact time being one second and five-hundredths."

* In 1890 the production of Cuba was increased to 21,810 tons.

## THE TAINTOR SAW SET.

The accompanying illustration shows a new saw set now being introduced by Wiebusch & Hilger, of New York. The essential feature of the set is that by it the saw tooth may first be grasped in a parallel vise and then bent with one motion of the hand. The handles are held apart by two springs, the weaker one allowing the lower handle to be compressed first so as to clamp the tooth; the tooth is at once



held, the upper handle is compressed, and the entire set takes a downward motion, giving the required pitch to the tooth. The anvil is so arranged that by moving the set screw, any desired angle may be attained, and another set screw regulates the amount of movement in the upper handles, thereby adjusting the amount of pitch given to a tooth. There is no lost motion, and each tooth is permanently set by a single movement without denting or breaking the tooth or buckling the saw.

## THE STRENGTH OF DELTA METAL AND COPPER WIRE.

It is well known that the tensile strength of copper greatly decreases with a rise in the temperature, and copper steam tubes on that account are liable to cause serious accidents. The Fairfield Shipbuilding and Engineering Company, Govan, has recently carried out some experiments with a view of strengthening the copper steam tubes by having wire coiled around them. As delta metal is known to lose comparatively little in strength with increasing temperatures, as shown by Prof. Unwin's experiments about a year ago, the Fairfield Company tested delta wire against copper wire, both cold and at the temperature of melting tin (442° F.), and obtained the following interesting results:

TENSILE TESTS OF DELTA AND COPPER WIRE.

| MATERIAL. | Diameter. | Area. | Broke at | Stress. | Elongation in six inches. | Elongation. |
|---|---|---|---|---|---|---|
| | Inch. | Sq. in. | Ton. | Tons per sq. in. | Inches. | % |
| Delta as received | 0·115 | 0·0103 | 0·6 | 58·25 | 1/4 | 2·08 |
| Copper as received | 0·18 | 0·0254 | 0·8 | 31·5 | 3/32 | 3·125 |
| Delta annealed | 0·115 | 0·0103 | 0·4 | 38·7 | 1 1/16 | 27·03 |
| Copper annealed | 0·18 | 0·0251 | 0·45 | 18.6 | 2 1/8 | 35·46 |
| Copper heated in melting tin | 0·18 | 0·0254 | 0·55 | 21·65 | 1/32 | 3·64 |
| Copper heated in melting tin | 0·18 | 0·0254 | 0·6 | 23·62 | 1/4 | 4·16 * |
| Copper heated in melting tin | 0·18 | 0·0254 | 0·55 | 21·65 | 1/4 | 4·16 |
| Delta heated in melting tin | 0·115 | 0·0103 | 0·525 | 50·97 | 1/16 | 11·45 |
| Delta heated in melting tin | 0·115 | 0·0103 | 0·5 | 48·54 | 3/32 | 9·54 † |
| Delta heated in melting tin | 0·115 | 0·0103 | 0·5 | 48·54 | 1/32 | 8·854 |

* Mean, 22·3. † Mean, 49.35.

**Hannssen's System of Weights and Measures.**—Mr. Hannssen, a Danish engineer, has discovered a slight modification of the present English system of weights and measures, whereby it can be converted into a decimal system with interrelated parts, like the metric system. Mr. Hannssen proposes to increase the foot by about a twenty-five-hundredth of itself—or the thickness of an ordinary sheet of note-paper. This would make a cubic foot contain precisely 1,000 oz. of distilled water at 4° C.; 16 cu. ft. would be equal to 100 gallons, called one hectogallon, and one hectogallon of water would weigh just 1,000 lbs.

## PRODUCTION OF OZOKERITE IN THE UNITED STATES.*

By E. W. Parker.

Ozokerite, or "mineral wax," belongs to the series of hydrocarbon compounds which include marsh gas, petroleum, and paraffin, it being very similar in appearance to the latter. It is colorless to white when pure, but frequently occurs leek-green, yellow, and brown. Prior to 1888 the only locality producing this mineral was in the province of Galicia, in Austria. Mining began there in 1862, and, though at first it was found exceedingly difficult to obtain sufficient capital to push the enterprise, it has increased rapidly since that date, and at present there are 35 companies engaged in the industry in the province of Galicia alone. For 26 years production was limited to this locality, but in 1888 American ozokerite began to receive the attention of the trade, and considerable work was begun upon a newly discovered vein in Utah. The mineral had been known to exist in Utah for some years, but whether in paying quantity was not satisfactorily determined until August, 1888.

During 1888 and 1889 most of the work done was in the way of development, but in the latter year there were incidentally produced 75,000 lbs. of crude ozokerite. Of this product 33·33% is lost in refining, the amount of refined ozokerite being 50,000 lbs., valued at $2,500. The product of 1888 was estimated at 65,000 lbs. of crude mineral. The product for 1890 will probably exceed 300,000 lbs.

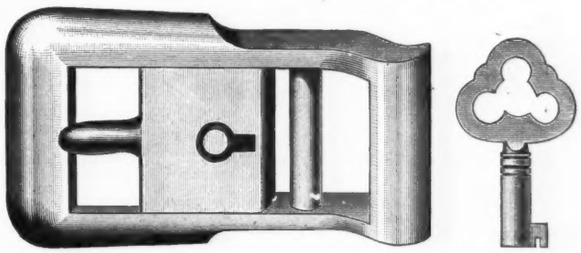
Refined ozokerite is used for nearly all the purposes to which ordinary beeswax is applicable. It possesses nearly all the properties of beeswax except stickiness, but in cases where that quality is essential it is necessary only to mix the mineral with ordinary beeswax. Crude ozokerite, like other hydrocarbon compounds, is used to a considerable extent as an insulator for electrical wires.

The following table shows the quantity and value of crude and refined ozokerite† imported into the United States from 1873 to 1889, inclusive:

| Years.‡ | Quantity. Lbs. | Value. | Years.‡ | Quantity. Lbs. | Value. | Years.‡ | Quantity. Lbs. | Value. |
|---|---|---|---|---|---|---|---|---|
| 1873.... | 25,135 | $4,244 | 1879.... | 44,963 | $6,016 | 1884.... | 617,992 | $69,026 |
| 1874 .... | 280 | 40 | 1880.... | 103,573 | 14,057 | 1885 .... | 1,056,438 | 123,976 |
| 1875.... | 7,430 | 1,026 | 1881.... | 98,911 | 12,792 | | | |
| 1876.... | 16,525 | 2,229 | | | | 1886.... | 800,496 | 71,220 |
| 1877.... | 101,604 | 11,720 | | | | 1887.... | 718,769 | 59,084 |
| | | | 1882.... | 272.509 | 29,322 | 1888 .... | 1.164.940 | 89,131 |
| 1878.... | 69,884 | 7,878 | 1883.... | 565.658 | 52,774 | 1889.... | 1,078,725 | 86,682 |

## THE CORBIN BUCKLE LOCKS.

The Corbin Cabinet Lock Company, of New York, is manufacturing a series of locks for buckles which it claims fill a long-felt want. The locks



are in sizes from ⅞ in. to 1½ ins. They are made flat, a very necessary feature, and are also made with and without loop guard. The locks are specially adapted to sample cases, trunk straps, or anywhere that a seal is required.

**The Electro-Deposition of Zinc and Aluminum.**—The following recipe for an electrolytic bath is given by Kaselowsky, of Berlin: Sulphate of zinc, 10 kilos.; glucose, 5 kilos.; water, 100 litres; sulphate of aluminum, 200 grms. Weak but constant currents must be employed, and the strength of the bath must be kept up by the addition of fresh quantities of the soluble salts of zinc and aluminum. Kaselowsky has also obtained good results from a bath composed as follows: Chloride of zinc, 6 kilos.; glucose, 5 kilos.; water, 100 litres; chloride of aluminum, 350 grms.

**Assignment of Patent.**—A patentee assigned to a firm of which he was a member all his interest in the patent "for their full, free, and exclusive use during the life of the partnership." Said firm assigned to another firm, of which the patentee was also a member, all the assets of the former firm, and agreed that during the existence of the second firm no right to manufacture or sell under said patent should be given to any third person. The second firm acquired the use of the patent during the existence of such firm.—*Nichols v. Murphy, Supreme Court of Illinois, 26 N. R. Rep.* 509.

**Regenerative Petroleum Lamp.**—Herr Julius Schnelke, of Berlin, has recently constructed a petroleum lamp which is similar in working to the Wenham and Clarke gas lamps. The petroleum is evaporated in a chamber, and after having passed through a ring of small tubes is burned as a gas without a wick, and produces an inverted flame. The products of combustion serve for the heating of a system of baffle plates, by means of which the air necessary for combustion is well heated before reaching the burner. The flame is perfectly white, and the regulation of the oil, which flows from a reservoir above, is easily effected by a needle valve, which at the same time secures the entrance of a clean oil into the lamp. The heating of the evaporating chamber is effected by a small flame, which is fed either by petroleum or by spirit, and which is automatically extinguished as soon as the evaporation of the oil has commenced and the lamp is in working order. Photometric trials show that the lamp has a high illuminating value per unit of oil consumed.

*From Census Bulletin, No. 75.

† Up to and including 1883 imported under "wax and manufactures of" and classed as "bay or myrtle, Brazilian, and Chinese"; since, as "mineral wax."

‡ Fiscal years ending June 30th to 1885, inclusive; calendar years subsequently.

## OFFICIAL REPORTS.

### Alaska Treadwell Gold Mining Company.

The report of the directors of this company for the year ending May 31st, 1891, shows that the total receipts were $790,001.71, of which $754,795.81 was from bullion, $14,969.99 from concentrates (501 tons) and tailings; $1,258.75 from interest, and $18,977.16 from the company store. The expenses were as follows: Mining 220,686 tons of ore, $155,572.19; milling 220,686 tons of ore, $92,838.41; chlorinating 5,368 tons of concentrates (5,777 tons were saved), $48,400.13; general expenses, $23,020 59 (Douglas Island $17,752.07, San Francisco $5,268.52); bullion charges (freight, insurance, and refining), $11,652.59; construction account (new machinery), $33,987.57; total mining expense, $365,471.48; expense of organization of the new company, $6,321 33; profit for the year, $418,208.90; total, $790,001.74. The dividends declared during the year amounted to $200,000.

The expenses per ton of ore were divided as follows: Mining 220,686 tons—labor, $0.4555; supplies, $0.2495; total, $0.7050. Milling 220,686 tons of ore, 5.777 tons of concentrates being saved—labor, $0.1940; supplies, $0.2266; total, $0.4206. Chlorination of concentrates—labor, $5.0312; supplies, $3.9852; total, $9.0164, or $0.2193 per ton of ore. General expense, including salaries, interest, exchange, insurance, hospital account, etc., $0.0804. San Francisco office expense, $0.0239. Bullion charges, $0.0528. Total operating cost, $1.5020. Legal and other expenses of incorporation of company, $0.0286 per ton of ore. Construction account, $0.1540 per ton of ore. Total cost of operating and construction, $1.6846. The yield per ton of ore was $3 58, the net profit being $1.90.

The Alaska Treadwell Gold Mining Co. was organized in 1890, with a capital stock of $5,000,000, divided into 200,000 shares of $5 each, fully paid. The company took over the Paris mine, on Treadwell Island, Alaska, on June 1st, 1890. The production of this mine from the time when first opened, in 1882, to May 15th, 1891, has been as follows:

| Dates | Tons crush'd | Yield free gold. | Concentrates (sulphurets). Tons chlorinated. | Concentrates (sulphurets). Yield. | Total Yield. | Total yield per ton. | Operating profits. |
|---|---|---|---|---|---|---|---|
| 1882-1884..... | ..... | $10 902.86 | ..... | ..... | $10,902.86 | ..... | |
| 1885. | | | | | | | |
| Aug to Dec.... | 34,495 | 232,176.33 | 205? | $10,143.00 | 242,319.33 | $7.02 | |
| 1886. | | | | | | | |
| Jan. to Dec... | 90,896 | 283,750.24 | 1,566? | 82 429.97 | 366,180.21 | 4.03 | $729,000.00 |
| 1887. | | | | | | | |
| Jan. to D | 108,306 | 343,421.80 | 1,697 | 133,512.72 | 476,934.52 | 4.40 | |
| 1888. | | | | | | | |
| Jan. to Dec.... | 121,173 | 348,264.20 | 1,354 | 81,625.21 | 423,889.41 | 3.55 | |
| 1889. | | | | | | | |
| Jan. to Dec | 214,544 | 540,665.03 | 2,527 | 111,825.75 | 652,490.78 | 3.04 | 308,000.00 |
| 1890. | | | | | | | |
| Jan. to May... | 47,768 | 101,279.70 | 1,516 | 59,402.16 | 160,681.86 | 3.36 | 38,000 00 |
| June, 1890, to May, 1891.... | 220,686 | 531,185.77 | 5.869* | 238,580.03 | 769,765.80 | 3.49 | 418,208.90 |
| | 837,798 | $2,391,615.93 | 14,734 | $717,518.81 | $3,109,164.77 | $3.71 | $1,493,208.90 |

* Including 501 tons sold.

The given "total yield per ton" does not exactly show the value of the quartz crushed in each period, as the amount of sulphurets chlorinated was sometimes less and sometimes greater than the product of sulphurets for that particular period. On May 15th, 1891, there were about 1,200 tons concentrates on hand, worth, net, over $30 per ton; the total profits have hence been $1,530,000, or nearly one-half of the gross product.

**Metallic Railway Sleepers.**—The practicability of using steel railroad sleepers in the place of wooden ones is now being tested by the Philadelphia & Reading Railroad, two sections of track with steel ties and rails and stone ballast having been laid. The company put down a considerable portion of steel-tie track on its Bound Brook division several months ago. The experiment there is said to have been successful so far. The steel tie that is used was designed by Assistant Superintendent Bonzano. It is of the inverted trough type.

**A Large Armor-Plate Ingot.**—At the armor-plate mill of Carnegie, Phipps & Co., at Homestead, Pa., an armor-plate ingot, 80 in. wide and 23 in. thick, weighing 32,000 lbs., has recently been cast. It is said to be the largest armor-plate ingot rolled in the country. The ingot was cast in a sand mold for a test, and the material proved much superior to that tested in a metal mold. Heretofore there has been a great deal of trouble in casting in metal molds, owing to the many flaws. The ingot cast in the sand mold was found not to contain a single flaw.

**Researches on Osmium, Osmiamic Acid, and the Osmiamates.**—Investigations by A. Joly upon osmiamic acid—a compound containing both nitrogen and oxygen, discovered by Fritzsche and Struve in 1847, are thus described in the *Chemical News*. He prepares the potassium salt of osmiamic acid by dissolving crystalline osmium tetroxide in potassa ($OsO_4$100, KOH100, water 50). To the liquid, which is kept at 40°, he adds 40 c. c. of caustic ammonia. In a few moments a yellow crystalline precipitate of potassium osmiamate is deposited. When the decoloration is complete and the liquid is cold he decants, washes the salt with iced water, and dissolves it in boiling water. It crystallizes on cooling in fine quadric octahedra. It is important to avoid an excess of ammonia, which would leave the potassium osmiamate mixed with a very unstable ammoniacal salt. The composition of the potassium salt is expressed by the formula $OsO_3NK + 2H_2O$. Osmiamic acid may be approximated to the nitroso-compounds of ruthenium which the autnor has previously described, $RuNOCl_2$,$RuNO(OH)_2$. If we admit the existence of a compound $OsNO(OH)_2$, osmiamic acid will be its first anhydride.

**Compounds of Nickel and Iron with Carbon Monoxide.**—There recently appeared in *Chemiker Zeitung* a paper by Professor Wartha, in which it was claimed that the author, repeating Messrs. Mond, Langer and Quincke's work with nickel, and using impure nickel oxide, obtained evidence some time ago of the formation of a volatile compound of iron, the iron being present in the nickel oxide as an impurity. The same discovery was announced by Messrs. Mond and Quincke in a paper read before the Chemical Society of England, June 13, 1891 (see ENGINEERING AND MINING JOURNAL, July 18). It is very likely that these discoveries were independently made, the delay in publishing the account of Professor Wartha's experiments being attributed to the editor of *Chemiker Zeitung*. Professor Wartha further stated in his paper that bodies such as those under discussion are explosive, a property similar to that of the compound $K(CO)_2$ produced in the manufacture of potassium, and that considerable care in their investigation is therefore necessary, at least one accident having happened already. In view of the possibility of compounds such as these playing a part in the cementation process of converting iron into steel, further work, by whomsoever it may be conducted, is industrially desirable.

## DIVIDENDS PAID BY MINING COMPANIES DURING JULY AND FROM JANUARY 1ST, 1891

| NAME OF COMPANY. | Paid in July. | Paid since Jan. 1st. | NAME OF COMPANY. | Paid in July. | Paid since Jan. 1st. |
|---|---|---|---|---|---|
| Adams, Colo..... | .... | $30,000 | Mammoth, Utah..... | ..... | $240,000 |
| Alaska-Treadwell, Alaska..... | $75,000 | 225,000 | Maxfield, Utah..... | $9,000 | 18,000 |
| Alice, Mont..... | ..... | 25,000 | May Mazeppa, Colo.... | 17,500 | 92,500 |
| American, Idaho..... | ..... | 100,000 | Mollie Gibson, Colo..... | 100 000 | 406,000 |
| American Belle, Colo.. | ..... | 50,000 | Montana Ltd., Mont.... | 39,600 | 118,800 |
| Aspen, Colo..... | ..... | 100,000 | Morning Star, Colo..... | ..... | 50,000 |
| Atlantic, Mich..... | ..... | 40,000 | Morning Star D., Cal... | ..... | 10,800 |
| Bald Butte, Mont..... | ..... | 40,000 | Mt. Diablo, Nev..... | 10,000 | 20,000 |
| Ballard-Smuggler, Colo. | 3,000 | 6,000 | Mt. McClellan, Colo.... | 12,540 | 12,540 |
| Bannister, Mont..... | 6,000 | 42,000 | Napa, Cal..... | 10,000 | 30,000 |
| Bates-Hunter, Colo .... | 7,500 | 15,000 | New Guston, Colo ..... | 110,000 | 220,000 |
| Best Friend, Colo. | 10,000 | 10,000 | Newton, Cal..... | ..... | 5,000 |
| Bimetallic, Mont..... | 70,000 | 490,000 | North Banner Cons., Cal..... | 5,000 | 15,000 |
| Boston & Mont., Mont.. | ..... | 250,000 | North Commonwealth, Nev..... | ..... | 25,000 |
| Calliope, Colo..... | ..... | 5,000 | North Star, Cal ..... | ..... | 50,000 |
| Calumet & Hecla, Mich | ..... | 1,000,000 | Ontario, Utah..... | 75,000 | 525,000 |
| Centennial-Eureka, Utah..... | 60,000 | 180,000 | Osceola, Mich..... | 50,000 | 100,000 |
| Central, Mich..... | .... | 20,000 | Parrot, Mont..... | 196.000 | 304,000 |
| Champion, Cal..... | ..... | 19,100 | Petro, Utah ..... | 7,500 | 17,500 |
| Clay County, Colo..... | 4,000 | 28,000 | Plumas Eureka..... | ..... | 35,150 |
| Cœur d'Alene, Idaho . | ..... | 20,000 | Quicksilver, Pref., Cal.. | ..... | 118,001 |
| Con. Cal. & Va., Nev.... | 108.000 | 108,000 | Quincy, Mich..... | ..... | 200,000 |
| Copper Bell, Mont ... .. | 13,500 | 13.500 | Red Cloud, Idaho ..... | 10,000 | 10,000 |
| Cor.ez, Nev ..... .. .. | 112,500 | 250,000 | Retriever, S. Dak..... | ..... | 12,500 |
| Daly, Utah..... .. | 37,500 | 262,500 | Rialto, Colo ..... . | 3,750 | 13,500 |
| DeLamar, Idaho..... | 72,000 | 72,000 | Richmond Cons., Nev.. | ..... | 20,250 |
| Derbec Blue Gravel..... | ..... | 10,000 | Running Lode, Colo.... | ..... | 15,000 |
| Elkhorn, Mont..... | ..... | 200,000 | San Miguel Con, Colo.. | 75,000 | 300,000 |
| Franklin, Mich..... | 80,000 | 80,000 | Sierra Butte..... | .... | 25,000 |
| Glengarry, Mont ... | ... | 10,000 | Silent Friend, Colo..... | ..... | 32,500 |
| Gold Rock, Colo..... | 3,750 | 7,500 | Silver Glance, Colo .... | .... | 4,500 |
| Granite Mountain, Mont | 100,000 | 900,000 | Silver Mg. of L. V., N. Mex..... | ..... | 75,000 |
| Hecla Con. Mont..... | ..... | 90.000 | Tamarack, Mich..... | ..... | 400,000 |
| Helena & Frisco, Mont. | .... | 50,000 | Teal & Poe, N. Mex .. | 3,000 | 5,250 |
| Helena & Victor, Mont. | .... | 40,000 | Whale, Colo..... | 5,000 | 5,000 |
| Homestake..... | 12,500 | 87,500 | W. Y. O. D., Cal..... | ..... | 4,500 |
| Horn Silver, Utah..... | .... | 100,000 | Yankee Girl..... | 130,000 | 260,000 |
| Idaho, Cal..... .... | 9,300 | 57,550 | | | |
| Iron Mountain, Mont.. | ..... | 25,000 | Total..... | 1,663,440 | 8,923,941 |
| Jackson, Nev..... | ..... | 5,000 | | | |
| Little Rule, Colo..... | 10,000 | 70,000 | | | |

## PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office:

TUESDAY, JULY 28TH, 1891.

456,558. Electrode for Secondary Batteries. Otis C. Flick, Brooklyn, Assignor to the Wellington Manufacturing Company, New York, N. Y.
456,560. Drill Press. Hiram H. Fuller, Meadville, Pa.
456,568. Double-geared Self-adjusting Vise. Joseph M. Heaser, Kipton, Ohio.
456,569. Gas Retort Charger. Andrew Hickenlooper, Cincinnati, Ohio.
456,570. Mill for Rolling Fan Tail Axles. Leroy D. Hill, Wilkesbarre, Pa., Assignor to the Sheldon Axle Company, same place.
456,571. Friction Clutch. William B. Horsford, Mishawaka, Ind.
456,583. Hydrocarbon Burner. Elijah S. Blasdel and John R. Morse, Los Angeles, Cal.; said Blasdel Assignor, by mesne assignments, to Charles B. Gould, same place.
456,588. Expansion Bolt. Robert McGrath, Brooklyn, N. Y.
456,591. File Box. Frank S. Osborn and Charles E. Foster, Washington, D. C., Assignors to the Fenton Metallic Manufacturing Company, Jamestown, N.Y.
456,593. Regulation of Dynamos driven by Compressed Air. Victor Popp, Paris, France, Assignor to the Popp Compressed Air and Electric Power Company, Limited, same place.
456,594. 456,595. Method for Utilizing Compressed Air for the Production of Mechanical Power. Victor Popp, Paris, France.
456,622. Magnetic Separator. David E. Lain, Yonkers, N. Y.
456,623. Roller Quartz Mill. Charles C. Lane, San Diego, Cal., Assignor to Hughes & Co., same place.
456,640. Hoisting and Conveying Apparatus. Cecil L. Saunders, Cleveland, O.
456,643. Blowing Engine. Sern P. Watt, Columbus, O., Assignor to the Columbus Machine Company, same place.
456,648. Steam Generator. Andrew J. Davis, Allegheny, Pa.
455 652. Friction Clutch and Speed Governor. Solon G. Henkel, New Market, Va.
456,664. Ball Bearing. Abe L. Teetor, Indianapolis, Ind.
456,689. Steam Boiler. Edward Blass, Essen-on-the-Ruhr, Germany.
456,694. Steam Engine. John H. Eickershoff, Cincinnati, O., Assignor to Leopold Feist, same place.
456,753, 453,754. Duplex Pumping Engine. Edward Barnes, Handsworth, Eng land, Assignor of one-half to Herbert W. T. Jenner, Washington, D. C.
456,770. Drill. John Muirhead, Pittston, Pa.
456,787. Wind-wheel. Milo J. Althouse, Waupun, Wis.
456,801. Valve for Rock Drills. Albert W. Daw and Zacharias W. Daw, Laurvig, Norway.
456,832. Valve for Reversing Engines. Richard W. Mewes, Newcastle-upon-Tyne, England,
456,837. Governor for Steam Engines. Ransom E. Olds, Lansing, Mich.
456,843. Secondary Battery. Henry Pieper, Liege, Belgium.
456,844. Gold Chlorinating Process. James H. Pollock, Glasgow, Scotland.
456,848. Steam Engine. Samuel T. Richardson, Baltimore, Md., Assignor to the Richardson Engine and Steamship Company, same place.
456 852. Concentrator and Amalgamator. Jacob Rodermond, New York, N. Y.
456,859. Electric Light Crane. Charles H Shank, Armordale, Kans.
456,889. Electric Circuit Breaker for Secondary Generators. Morris Feilbogen, New York, N. Y., Assignor to Gustav Lindenthal, Pittsburg, Pa.
456,894. Boiler Cleaner. Thomas E. Jones, Bristol, Tenn., Assignor of one-half to S. D. Sessier, same place.
456,898. Anti-friction Alloy. Charles B. Miller, New York, N. Y.
456,908. Electric Hoisting Machine. George H. Reynolds, New York, N. Y., Assignor to the American Electric Elevator Company, same place.
456,909. Friction Clutch. Alva C. Rice, Dayton, Ohio, Assignor to the Stilwell & Bierce Manufacturing Company, same place.
456,927. Manufacture of Lead-lined Iron Pipe. George W. Harrington, Wakefield, Mass.

## PERSONALS.

Mr. Wm. Byrd Page, mining engineer, of Leadville, Colo., is visiting at Blue Ridge Summit, Franklin County. Pa.

Mr. Carl Henrich, mining engineer, of Noble, Ill., has been appointed superintendent of the Pittsburg & Tennessee Copper Company's mines, near Ducktown, Tenn.

Mr. E. N. Van Cortlandt, mining engineer, has returned from the Isthmus of Panama. He has been acting manager of the Darien Gold Mining Company, Limited, during the past year.

Mr. C. G. Munroe, superintendent of the mill of the Blue Bird Mining Company, Limited, at Butte, Mont., and Mr. C. H. Bartlett, the assistant superintendent, have resigned their positions.

Capt. J. R. DeLamar, managing director of the DeLamar Mining Company, Limited, of DeLamar, Idaho, returned from London on the 25th ult. He spent a few days in New York before going West

Mr. Austin King, mine inspector of the eighth bituminous coal district, Pennsylvania, has forwarded his resignation to Governor Pattison. He will accept the position of mining superintendent for the H. C. Frick Coke Company.

Mr. Joseph Hartshorne, superintendent of the basic steel plant of the Pottstown Iron Company, of Pottstown, Pa., has gone to Europe to visit the Hoerde and Witkowitz works. He expects to return during the latter part of August.

Mr. E. Hooper, of the well-known firm of Berwick, Moreing & Hooper, mining engineers, of London and San Francisco, has returned from a trip to Montana on business for the firm, and has gone to the Garfield mine of Nevada, for which he is consulting engineer.

Mr. Griffith G. Roberts, lately inside foreman for the Lehigh and Wilkesbarre Coal Company, at Audenried, Penn., has become the manager of the Brookside slate quarry at Slatington. He will also be superintendent of the Monarch slate quarry at Woodley.

Mr. C. P. Mason, manager of the Utah and Montana Machinery Company, of Salt Lake City, Utah, who is widely known in mining circles of the West, having furnished machinery to such companies as the Ontario, Daly, and Eureka Hill, spent a portion of last week in New York, visiting his friend, Mr. H. C. White, of 15 Cortlandt St. He left for the West on the 28th ult.

## OBITUARY.

General Perley P. Pitkin, one of the Argonauts who went to California in 1849, died at Montpelier, Vt., on the 28th ult., aged 65 years.

William N. Weeden, of New Bedford, Mass., the well-known inventor, died on the 25th ult. at Rangeley Lakes, Me., aged 50 years.

W. S. Pollett, general manager of the Western Coal Screening and Patent Fuel Manufacturing Company, was killed by a train at Denver, Colo., on the 28th ult., while walking on the track. He was 40 years of age.

Bruno Fritsch died in St. Louis on the 12th ult. He was born 1840, in Silesia, Germany, came to this country in 1856, was for 20 years connected with the St. Louis Iron and Machine Works and started in 1888 the Ranken & Fritsch Foundry and Machine Company, of which he was president at the time of his death.

Willoughby Smith, the eminent electrical and telegraph engineer, died on the 16th ult. Since 1850 he was constantly connected with the manufacture and laying of submarine cables. He assisted Professor Wheatstone in the experiments on the retardation of signals through submarine wires in 1854. He was engaged in the laying of the cables between France and England. Spezzia and Sardinia, and of the transatlantic cables.

Joseph P. Dyer, a prominent resident of Oakland, Cal., and for years one of the leading stockbrokers of San Francisco, died suddenly on the 21st inst., while visiting in Washington. Deceased was a native of Maine and about 64 years of age. He went to California many years ago and engaged in business in Sacramento. In 1875 he entered the brokerage basiness, and was a partner in the well-known firm of Kenny & Dyer. In 1886 he lost heavily by the big advance in Consolidated California & Virginia, and was forced to suspend. He lost most of his money at this time, and the troubles which then developed are supposed, in some measure, to have hastened his death.

Josiah Kisterbock died on the 27th ult. at Woodbury, N. J., aged 89. He was a native of Stockbridge, Mass. He went to Philadelphia, Pa., in early life, engaged in the business of making stoves and heaters, and was at first in partnership with Mr. Job Bartlett, afterward going into business for himself. Mr. Kisterbock devoted great attention to the adaptation of anthracite coal as a fuel, this having come upon the market in his early career. He was the first successful adapter of the anthracite in sheet-iron stoves, and his invention of the "Kisterbock stove" in Philadelphia was so successful that it set the fashion and laid the foundation of his fortune, his invention being brought into general public notice by the Franklin Institute.

The Hon. E. C. Allen, the well-known publisher of Augusta, Me., died suddenly on the 28th inst. in Boston from a complication of pneumonia and heart failure. When only a boy, without friends and with what money he had earned, he started the publication of a monthly periodical which reached the extraordinary circulation of 400,000 copies the first year. In 1870, before he had attained his majority, he erected a six story publishing house which cost upward of $125,000. Until 1871 he enjoyed uninterrupted success, but that year he received a setback, mainly through pushing plans that proved unpopular and by over-advertising, which resulted in the loss of over $250,000. This swept away his accumulated capital and left him with a large indebtedness, which he wiped out in 1876 by the publication of a popular record of the Centennial Exposition. From this time his business success progressed uninterruptedly. At the time of his death he employed 500 men in the publishing business, had a branch house in Portland, and agents in the leading cities of the Union, issuing some ten publications. He had heavy investments in the West and was one of the largest ship owners in Maine. He was also extensively interested in cotton, paper, and pulp mills in Maine and Canada. He was 42 years old.

## EXPORT NOTES.

Señor Batres, the Guatemalan Minister at Washington, has been instructed to negotiate a reciprocity treaty with the United States.

The value of the machinery, the agricultural implements and the hardware exported from New York in June amounted respectively to $411,116, $248,542 and $194,116.

A 15-in. horizontal Victor turbine has been exported by the Stillwell & Bierce Manufacturing Company, Dayton, O., for driving a plant of mining machinery in South Africa.

The value of the exports from Japan in 1890 was $42.030,000, of which $15,725,000 went to the United States; imports amounted to $58,097,500, $5,453,800 coming from the United States.

The Peruvian shipping laws have been reformed so as to allow mail steamers to discharge and receive cargo on feast days. The great number of these in Peru makes this change a matter of importance.

The Government of Nicaragua has abolished its system of ad valorem duties, and now assesses duties upon the gross weight of each article according to the printed tariff. Consular certification of invoices has also been dispensed with.

United States Attorney-General Miller has rendered the decision that foreign exhibitors at Chicago can bring with them enough employees to to show the process of manufacturing the goods displayed without being held for violation of the contract labor law.

If an American house were established in Singapore, it would, according to a consular report, control at once not only all the shipments of tin to the United States, but the shipment of nearly all the $11,000,000 of exports from the Straits Settlements to the United States.

The Three Americas Company, of Boston, has fitted out three steamers to visit the principal South American ports for the purpose of exhibiting American-made goods likely to find a market there. The company also proposes to establish commercial agencies in said countries.

A somewhat curious movement has recently been started in Calcutta, the object being to boycott everything English. A league has been formed, and its members have bound themselves to have nothing more to do with Manchester cloth, Liverpool salt and English imported goods. The immediate result has been an impulse to the production and sale of hand-made cloth and piece goods of Bombay.

All the American consuls in Italy agree that if American manufacturers would cause their goods to be represented personally in Italian cities by competent agents in the same manner that English and German goods are represented there, the superior quality of the American manufacture would soon lead to a large sale for the latter. Where intelligent efforts have been made to sell American goods they have met with success. There is practically no hardware made in Italy and few farm implements.

The exports of Costa Rica for 1890 amounted to £1,372,101, the the imports £845,000, of which the United States sent £300,685. The British consul states in the London *Times* that "there are few countries in Spanish-speaking America which at the present time show such vitality and prospects as Costa Rica," a fact which seems to be borne out by the constant arrival of representatives and agents of German and United States firms. The American trade, which five or six years ago was comparatively inferior, now exceeds that of any other country.

Carlos Fry, the South American explorer, in a letter to the Prefect of Junin, Peru, announces the discovery of a short practicable route from Chanchamayo to a good port on the Pichis, one of the navigable tributaries of the Upper Amazon. This means a revolution in the trade and industry of the interior of Peru, which, while comprising some of the richest regions in the world, is now comparatively valueless, through the want of practicable means of transport. By this route it will be possible, so Mr. Fry says, to reduce the journey from Lima to the eastern river ports from thirty days to four or five. He estimates that, with a few score laborers, the road can be completed within six months, and at a small cost.

The British Consul at Nantes, France, reports to his government that British agricultural implements were in danger of being superseded by American in 1890, owing to increase in prices which the makers were obliged to ask on account of strikes and higher wages in England. The loss of this trade was only averted by the British manufacturers agreeing to leave the price unchanged. Still, all reaping and binding machines sold were of American make, no others being able to compete with these. Any increase in the price of English implements would undoubtedly give Americans control of the whole market. American machines are always well represented at the agricultural implement shows and thus become well known among the farmers.

Consul-General Kimberly states in his latest report that only 10% of the goods imported into the republic of Guatemala came from the United States, although he believes a great many articles made here would find a ready sale there, a fact borne out by the frequent occurrence of cheap imitations of American sewing machines, firearms, cutlery and hardware generally. No effort seems to be made to introduce our manufactures into Central America. The custom of printing in catalogues prices subject to discounts from 10% to 50% must be abandoned, as the price would thus compare apparently very unfavorably with the European rates. Bulky goods must be shipped via Hamburg, Germany, as the direct-freight charges are much more expensive. The exports for 1889 reached $13,247,700, against $7,239,900 in 1888; the imports, $7,079,400, of which $1,332,400 came from the United States.

A recent English consular report states that in the district of Chinkiang, China, small farmers have no need for iron fencing, agricultural machinery, or the like; their one care being to get a sufficient quantity of water onto their land at the right time and get rid of an excess of water without opening embankments. In the Chinkiang district most of the reservoirs, made to furnish a water supply for wheat, indigo, and rice crops, ran dry last year, and a cheap pump, especially if it were portable, might find favor. No artificial piping can compete south of the Yangtze with bamboo for cheapness and handiness combined, but iron elbows might be a useful supplement; and there are a few other articles, such as siphons, small and light fire engines, garden syringes, safety kerosene lamps, etc., which might find a limited sale if well advertised or exhibited in use. With a new class of machinery it is not only necessary to overcome opposition among those workmen who are interested in the special branch of labor in question, but also to exercise foresight and energy in the provision of supplies on a large enough scale for the machinery to prove remunerative. Owing to deficiency of material and other causes some inexpensive machinery which was recently bought by a Chinese in Chinkiang for hulling rice and cotton-ginning has been lying idle.

## INDUSTRIAL NOTES.

The Columbia Iron and Steel Company, Uniontown, Pa., has settled all labor claims, and the plant is ready to start.

The Cambria Iron Company's furnace, No. 1, at Hollidaysburg, Pa., started up on the 29th ult., after several months' idleness. It will give employment to 200 men.

The Catasauqua Rolling Mill, Catasauqua, Pa., which has been idle since July 1st because the managers refused to sign the Amalgamated Association's scale, has resumed with non-union men.

The Baltimore United Oil Company's works at Canton, Md., and two large tanks containing about 48,000 barrels of oil valued at $4 a barrel were destroyed on the 28th ult. The tanks were valued at $10,000 each.

The Laflin & Rand Powder Company at Platteville, Miss., had an explosion in its new mill there on the 27th ult., as it was about to be started for the first time. The building was wrecked, and a workman who happened to be there was blown to atoms.

The Wilkin Manufacturing Company, of Milwaukee, Wis., manufacturers of the Nordberg Corliss engine, has sent out notifications that Mr. Theo. S. Wilkin is no longer employed by the company, and that in the future all correspondence is to be addressed to the company.

The Irwin Plate-Glass Works, at Pittsburg, Pa., started operations in the new plant last week. The first casting was witnessed by a large number of stockholders from New York. The plant cost $850,000, and will have a capacity of 1,250,000 sq. ft. of plate glass. Five hundred hands will be employed.

Messrs. Moorhead Brothers & Co., iron manufacturers in Pittsburg, Pa., who recently refused to sign the Amalgamated Scale, have submitted a scale to their employés. They say they do not ask any reductions, except in the plate mill. Unless the employés accept this scale non-union men will be employed.

The West Hamburg Rolling Mill, at West Hamburg, Pa., operated by the Pottsville Iron and Steel Company, which has been idle several weeks because of a difference between the employés and lessees, who refused to sign the Amalgamated Scale, resumed operations on the 27th ult. Three furnaces were put in blast with non-union men, and a strong effort will be made to increase their number.

The stockholders of the Scottdale Iron and Steel Company, Scottdale, Pa., have elected the following officers and board of directors for the incoming year: President, P. S. Loucks; secretary, C. Grazier; treasurer, J. R. Stauffer; directors, J. R. Stauffer, P. S. Loucks, C. Grazier, W. W. Taylor, P. Campbell, A. H. Campbell, and A. S. Livengood. All the labor questions have been adjusted, and the plant will be kept in steady operation.

The Wrought Steel Wheel Company has been incorporated with a capital stock of $2,000,000 by William P. Shinn, of Pittsburg, Pa.; Smith M. Weed, George W. Bentley, Edward A. Smith and Nicholas W. Nivan, of New York, and James W. Roach, of Camden, N. J. The company will manufacture wrought solid steel car wheels for railroad use. Mr. Shinn will be president of the company, and Gen. William F. Smith, of Philadelphia, treasurer.

Work has been resumed in some of the Welsh tin-plate works which shut down on July 1, but a considerable number are still idle. Prices continue to be unremunerative. It is thought that it will be three months before the trade becomes brisk again. The Daniel Edwards Company is unable to resume operations, its men declining to work the new flux system. It is said that the company is taking steps to sell the flux patents in America.

The Columbia Patent Company is the title adopted by the barbed wire manufacturers of the United States, who have now completed all details for a trust. The headquarters of the trust will be in Chicago. The nominal capital is $2,500,000. John Gates, the St. Louis wire manufacturer, who so persistently fought the Washburn monopoly for years, and even yet has suits pending in the United States courts, has joined hands in the new combination, and has been elected president of the new company.

Judge Cox, of the United States Circuit Court of New York, rendered a decision on the 23d inst. sustaining the Brush storage battery patents, which have been in litigation for nine years, first in the Patent Office and for the past four years in the courts. The Julien Electric Company and the Electrical Accumulator Company were the defendants in the suit. By virtue of the recent decision the Brush Electric Company, which owns all the electrical patents of Charles F. Brush, secures a monopoly of the business of making and using storage batteries.

The Pittsburg Oil Well Supply Company's new puddling mill at Frankstown, Pittsburg, Pa., collapsed on the 29th ult., killing three men and seriously injuring three others. The building, which was in course of erection, was 193 ft. long by 106 ft. wide, constructed of brick and iron. At the time of the accident 42 men were at work on the structure and 25 others were working in the immediate vicinity. The men were engaged in hoisting an immense iron truss, when it toppled over, and, striking an iron beam, knocked the iron girders out. The immense structure at once fell together with an awful crash, burying nearly all the men in the ruins. The plant was formerly owned by the Elba Iron and Bolt Company, but was recently purchased by the Pittsburg Oil Well Supply Company.

The United States Glass Company, recently organized, is composed of King Glass Company, Ripley & Company, George Duncan & Sons, Adams & Company, O'Hara Glass Company, limited, and Brice Brothers, all of Pittsburg; Richards & Hartley Glass Company, Challinor, Taylor & Company, limited, Tarentum; Gillinder & Sons, Greensburg; Hobbs Glass Company, Wheeling; Bellaire Goblet Company, and the Columbia Glass Company, Findlay, O., and the Nickel Plate Glass Company, Fostoria. The capital of the company has been fixed for the present at $1,000,000 preferred stock, $3,000,000 common stock. The officers are: Daniel C. Ripley, president; William C. King, vice-president; Andrew H. Bryce, secretary; James B. Lyon, treasurer; James T. Wilson, auditor; August H. Heisey, manager commercial department; Joseph Anderson, general manager manufacturing department; William A. Gorby, purchasing agent. The United States Glass Company becomes owner in fee simple of the thirteen glass plants, and issues its common stock at par in full payment therefor.

The National Lead Trust's shareholders will meet in New York on the 27th inst. to consider the following proposition for a reorganization of the concern: "That a corporation be organized under the laws of the State of New Jersey, and acquire the properties, stocks, and interests now held in trust by the trustees of the National Lead Trust, or the properties represented by said stocks, or the whole or portions of both, so that this corporation shall own all the assets now held in trust or represented by the stocks now held in trust by the trustees. This corporation to have a capital of $30,000,000, of which $15,000,000 shall be cumulative 7 per cent. preference stock, and $15,000,000 common stock. This corporation to be authorized to issue $3,000,000 6 per cent. debenture bonds, of which $371,364.25 to be used for the redemption of mortgages on different parts of the real estate, $149,487.36 to be used to reimburse the trustees for cash moneys paid for properties acquired since the organization of the trust, and the balance to be held in the treasury of the New Jersey corporation to be disposed of to acquire additional capital for carrying on the various businesses so to be acquired. The trustees of the National Lead Trust to be authorized to take all proper and necessary action to carry out such a plan of reorganization as that above outlined; all the shares of the preference and common stock of the New Jersey corporation to be transferred to the shareholders of the National Lead Trust in the proportion of one share of the 7% preference and one share of the common stock of the New Jersey corporation for six shares of the National Lead Trust." President Thompson stated on the 27th ult. that the trustees wanted to conform to the law, and believed that the business could be better carried on in the new way. The present capitalization of the trust is $89,447,600. Under the proposed plan there will be a scaling down of three for one. From the bond issue will come money to be used for smelting expenses, the oil business of the corporation, and other expenses requiring ready cash.

## MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

**If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.**

**Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office. No charge will be made for these services.**

**We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.**

**These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.**

### GOODS WANTED AT HOME.

**2,331.** A saw to be worked by horse power in cutting cord wood into suitable lengths for fire places. New York.

**2,332.** A steam shovel capable of excavating 300 to 500 tons daily. New York.

**2,333.** A dovetail machine and a combined trimmer and ripping saw. North Carolina.

**2,334.** A 60 horse power automatic cut-off engine with a 70 or 80 horse power boiler. North Carolina.

**2,335.** Sheet metal press to stamp barrow trays, sufficiently large to take in a blank 45 × 45. Ohio.

**2,336.** A 16-ft. fan, a 16 × 20-in. engine, and a 50 horse power locomotive boiler. West Virginia.

**2,338.** Machinery for grading. West Virginia.

**2,339.** A small, second-hand locomotive; must be very small for hauling miner tram cars up 2% grade, 3-ft. gauge. Alabama.

**2,340.** A mineral indicator. Alabama.

**2,341.** A cheap fertilizer mixer. South Carolina.

**2,342.** Thirty-lb. steel or 30 to 40 lb. iron rails with fish plates, spikes, bolts, etc., for five miles dummy road; also a second-hand dummy motor or light saddle tank locomotive, closed coach, and six freight cars. Georgia.

**2,343.** French burrs and set of dogs for cutting quartered oak. Tennessee.

**2,344.** Machinery for working soapstone. South Carolina.

**2,345.** Appliances for hydraulicking; rotary pumps preferred. South Carolina.

**2,346.** Manganese as pure as possible. Connecticut.

### AMERICAN GOODS WANTED ABROAD.

**2,321.** Furnace using gaseous fuel for the reduction of tin ore. Peru.

**2,337.** A magnetic separator to separate magnetite from blende. France.

## GENERAL MINING NEWS.

### ALABAMA.

#### CLEBURNE COUNTY.

PINETUCKY.—A cave occurred in a shaft of this gold mine on the 20th inst. One miner was killed and two fatally injured.

### ARIZONA

#### GILA COUNTY.

OLD DOMINION COPPER COMPANY.—Two furnaces are running regularly. The mine is reported to be looking excellent.

#### PIMA COUNTY.

EL PLOMO MINING AND SMELTING COMPANY.—Mr. J. Bower, superintendent of the Salero mines, a group of 10 claims, purchased by this company in 1888, stated in an interview with the Tucson *Citizen*: The former owner of the property, Jno. H. Campbell, had only sunk a 50-ft. shaft on one claim, but a test of the ore satisfied the present company of the value of the mine. Under the management of Col. John Weir two shafts, each 150 ft., and a number of levels were run. At present only about 20 men are employed. There is now a large amount of ore at the mill, and it is the object of the company to use all the ore on dumps before enlarging the output. General Manager Weir is now in New York, and negotiations are under way whereby the machinery of two new hoisting works will soon be purchased in the East and sent out and set up at the mines, when the company will extend the shafts to the 500-ft. level and increase its force of miners. Three or four of the mines upon which no work is being done have proved to be as good as those which are being worked. The ore bodies of the latter run from 6 in. to one foot in width. The deepest shaft on the mines being worked is 150 ft., from one of which an east level of 90 ft. and a west level of 100 ft. have been driven, stopes having now been opened above them. All the first-class ore is shipped to and marketed at Pueblo, Colo., while the second-class is worked at the concentrator at Sonoita, 10 miles distant. (See ENGINEERING AND MINING JOURNAL April 19th, 1890.)

### COLORADO.

NEW LA PLATA MINING AND SMELTING COMPANY, LIMITED.—The output of the La Plata mines in June was $5,330; slag dump at smelting works, $960; profit to the company, $820. The La Plata mines are reported to be showing considerable improvement.

#### BOULDER COUNTY.

INGRAM MINING AND MILLING COMPANY.—Suit has been brought against this company by Henry C. Brown for recovery of certain mining property. An injunction restraining defendant from operating in the disputed land is also asked. The plaintiff alleges that the defendant unlawfully ejected him from 1,000 ft. of the 1,500 ft. of the Carpet Bagger lode, which he owns.

#### CLEAR CREEK COUNTY.

AMERICAN SISTERS MINING COMPANY.—In the stope in the American Sisters mine, says the Idaho Springs *Gazette*, there is a streak of ore 300 ft. long and ranging in width from 5. in. to 2 ft., worth from $400 to $500 per ton. The stope has 500 ft. of unbroken ground above it.

#### EAGLE COUNTY.

NOLAN CREEK MINING COMPANY.—A body of lead-copper sulphide ore 3 ft. thick has been struck in the Aspen Belt mine. A small vein of the same kind of ore has been uncovered in the Layton mine.

#### GILPIN COUNTY.

DENVER GOLD COMPANY, LIMITED.—This company is to be reorganized as the Indiana-Kansas Gold Mines, Limited. Shareholders of the Denver Gold Company may exchange two shares of the old company for one (fully paid) of the new, upon the payment of 5s. The 5s. will be called up in installments. Mr. H. T. Walker, chairman of the New California, Limited, will be at the head of the new concern, while Mr. J. Jameson Truran, secretary of the old company, will continue in the same position.

NEW CALIFORNIA, LIMITED.—The June output amounted to 440 tons, which yielded 195 oz. of gold, valued at about $3,150. The working expenses were $2,700. The sum of $1,200 was expended on exploration and development work.

#### GUNNISON COUNTY.

GOLD CUP.—It is reported that this group of mines in the Tin Cup District, have been purchased by Mr. A. E. Reynolds, of Denver, who will at once put a large force of men at work in them. The property, which is the most famous in the district, has been idle for several years.

MAY-MAZEPPA CONSOLIDATED MINING AND MILLING COMPANY.—Ore shipments average over 20 tons per day, taken principally from the 550-ft. level. The ore body at this point is said to be the finest ever opened in the mine. The grade, as well

as the size, of the ore chutes opened in this mine, is apparently improving with depth. Numerous streaks of iron are showing in Dividend shaft, indicating that the ore is not far distant. It is now thought quite probable that the ore will be struck much sooner than was originally expected.

RUBY KING MINING COMPANY.—This company has been organized with a capital of $1,000,000 by L. R. Ebrich, H. E. Wilson, L. A. Civill, F. G. White and H. G. Lunt, to acquire and operate the Ruby King mine in the Irwin district. The mine was formerly a producer of rich ore. The main office of the company will be at Colorado Springs, Colo.

HINSDALE COUNTY.

GOLDEN FLEECE.—Mr. Chas. Davis, lessee of this mine, which was formerly known as the Hotchkiss, recently shipped a carload of ore to Denver, which sold for $19,000. The total weight of the lot was 24,360 lbs. The entire shipment was made from ore saved in sinking the shaft 18 ft., no stoping having been done. The ore body widens as it is followed downward, and is now over 3 ft. wide in the bottom of the shaft. About 18 in. of this is the extraordinarily rich gold telluride ore which was struck near the surface several weeks ago. The report that the mine had been sold for a large amount of money is stated to be incorrect.

OURAY COUNTY.

GENESEE-VANDERBILT MINING COMPANY.—The big tunnel was completed on the 15th ult. when connection was made with the old shaft.

PITKIN COUNTY.

ASPEN CONTACT MINING COMPANY.—This company, operating on Woody Creek, under the management of Mr. W. E. Newberry, is shipping about 15 tons of ore per day, which assays from 30% to 50% lead and 30 oz. to 60 oz. silver per ton.

BUSHWACKER MINING COMPANY.—At the annual meeting of the shareholders on the 16th ult., E. D. Wright was elected president. B. Clark Wheeler declining re-election. The following board of directors was elected: F. G. Buckley, H. R. Woodward, W. B. Cochran, E. D. Wright and B. Clark Wheeler, F. G. Buckley was re-elected manager.

LITTLE RULE MINING COMPANY.—Recently work was begun in the ground north of the tunnel. Good ore was uncovered for 20 ft., when a cave was opened that extends at least 70 ft. deep below the works and 30 ft. above. There is mineral in the cave and it is expected that rich developments will be made. The company has just paid its seventeenth consecutive monthly dividend of $10,000, making $170,000 paid to date.

MOLLIE GIBSON CONSOLIDATED MINING AND MILLING COMPANY.—It is reported that a large body of ore of good grade has been cut by the diamond drill in the Sanguist claim east of the Silver King. It will be opened by the fifth level from the Silver King shaft, which is now being sunk as rapidly as possible.

ST. JOE AND MINERAL FARM CONSOLIDATED MINING COMPANY.—This company is preparing to put a power drill in the incline, which is opening better ore than ever. The ore body shows down the incline for 100 ft., averaging over 40 oz. silver per ton.

SAN JUAN COUNTY.

BANDORA.—The sale of this group of mines, located near Silverton, reported in May, has been consummated by the final payments of the purchase money. There is said to be a large amount of ore in sight in the property.

## CALIFORNIA.

AMADOR COUNTY.

(From our Special Correspondent.)

REEVES GOLD MINING COMPANY.—This property was only incorporated early in the present year, and the first work was begun about two years ago, when a tunnel was run for a short distance. Considerable money was expended in erecting a 20-stamp mill, which has been idle most of the time. The mill is operated by water power, under 400 ft. pressure, and is supplied with two Frue concentrators. A two-compartment shaft has been sunk on the foot-wall side, hoisting works erected, and rock is now being taken out which shows up well, and promises to compensate for what, at the time, were considered by many to be unwarrantable expenditures.

BUTTE COUNTY.

STANDARD MINING AND MILLING COMPANY.—The Buffalo, Cambria, Rider, Oregon, and Bloomingdale locations, which are said to have produced an aggregate of nearly $2,000,000, and were abandoned years ago, have been consolidated under the name of the Standard Mining and Milling Company and are to be reopened. The shafts are only 300 ft. deep and are full of water. When these are pumped out the Cambria shaft will be sunk 200 ft. deeper, and all the mines opened on that level.

COLUSA COUNTY.

NEW ELGIN.—According to press dispatches, a body of quicksilver ore, assaying 25% mercury, was cut by the tunnel last week. The mine, which is owned by Moore & Clapp, is said to have a large body of ore assaying 1% mercury.

EL DORADO COUNTY.

The big tunnel, one mile north of Placerville, in Big Cañon, was started several years ago, says the Placerville *Democrat*, the object being to tap a system of quartz veins running northerly and southerly through a high mountain east of the starting point. The tunnel being at right angles with the veins would cross-cut them at the depth of about 900 ft. perpendicular below the surface. The tunnel is now in 580 ft., and 1,040 ft. from the mother lode, which runs northerly and southerly through the State. The tunnel has crossed a large body of slate.

MONO COUNTY.

DUNDERBURG.—The work of repairing and cleaning the Dunderburg tunnel is being pushed by Superintendent Purdy, who has retimbered the entrance, many of the old timbers having caved in since the mine has been idle. The tunnel is to be cleaned out, and several tons of average ore stopped for a mill test, a sale of the property to an English syndicate being in course of negotiation. When this mine was first opened, some 20 years ago, quartz mining was in its infancy and the processes for working ores were not so efficient as at this time; refractory ores could not be worked at a profit, and the ores from this mine were of this class. Now there is thought to be nothing to prevent the profitable working of the Dunderburg ore. The tunnel is in over 700 ft., and drifts were run north and south on the front ledge, the back one not having been prospected thoroughly. There is a large amount of ore on the dump, which may pay to work. The mine, which is about 6 miles in a direct line from Bridgeport, is well situated for economical working, water-power and timber being close at hand.

(From our Special Correspondent.)

BULWER CONSOLIDATED MINING COMPANY.—The work of stoping ore has been discontinued for the present. A short time ago a body of good ore 8 ft. in width was struck on the 200 level, but at the request of the Standard Consolidated Mining Company work was suspended until a survey can be made to establish its location, the latter company believing it to be within its lines. The Bulwer people, however, contend that it is fifty feet from the Standard line. The work of crushing ore was concluded on the 19th ult. The average of battery samples for the week was $26.18; tailings, $44.63.

NEVADA COUNTY.

TELEGRAPH GOLD AND SILVER MINING AND MILLING COMPANY.—Articles of incorporation of this company have been filed. The capital stock is $325,000, and the directors are Patrick Feeney, Timothy Hurley, James Zarvaskie, Maurice O'Connell and Richard White. The company has bonded the Joseph Glasson claim, adjoining the W. Y. O. D., in Grass Valley.

PLUMAS COUNTY.

Since the Spanish Ranch district was organized, says the Oroville *Mercury*, over $25,000,000 in gold have been shipped by Wells, Fargo & Co. from that place, and fully as much before any express company was in existence at that place. From the small miners, who work with pick and shovel in that district and sell their weekly clean-ups, Thompson & Kellogg have purchased in round numbers $1,650,000 during the past twenty years. Last year they purchased $22,109.30 from the same class of miners. The larger companies shipped their gold. Last year, in the eastern part of this county, the Jones Brothers, who own a gravel mine, took out $38,000, and worked only three months. They found six nuggets that were worth $3,500. The Sutton mine is now putting up a quartz mill. It is situated six miles north of Quincy. Two miles north of Quincy Charles Thompson and Frank Thomas are employing a dozen men, and are now doing preliminary tunneling through bedrock to reach the gravel. They have paid expenses in picking up nuggets that run from $5 to $100.

SAN BERNARDINO COUNTY.

SAN JACINTO ESTATE, LIMITED.—It is reported by local papers that some excellent tin ore is being taken from a new winze 16 ft. below the old workings of the Cajalco mine. Development, it is understood, is resulting satisfactorily at the Cajalco camp; everything is progressing smoothly, though but little work is being done at the lower dam. The company has leased about 6,000 acres of mineral land to a Chicago syndicate for a term of ten years. The lease includes the old Gavilan gold mines. The company receives a stipulated nominal sum annually and 20% of the gross output of the mines. The Gavilan mines in former years paid well, even though arastras and a small stamp mill some miles distant were the only means used in crushing the quartz. The remains of the thirty or more old arastras are still to be seen about the mines.

SISKIYOU COUNTY.

NORTH STAR.—Boyle & Co., owners of this quartz mine, at the head of Humbug Creek, have their stamp mill in operation and expect to do considerable work on the property.

## GEORGIA.

DADE COUNTY.

A press dispatch announces that 20 members of the Penitentiary Committee of the Georgia Legislature have gone to Senator Joseph Brown's convict coal mines in this county to investigate matters. Chairman Clifton, in an interview, said that the convict system in Georgia must go.

## IDAHO.

ADA COUNTY.

WASHINGTON.—The silver ledge was cut by the crosscut drift of the 300 ft. level a few days ago. The ore is said to be very rich, and the best ore yet opened in the mine.

ALTURAS COUNTY.

RED ELEPHANT MINING COMPANY.—The lower level of the Red Elephant mine has developed a body of ore, undoubtedly large, although its extent is not yet known. It has already been penetrated 16 ft., and the opposite wall not yet reached. There are two streaks of solid, high grade ore, each 2 ft. wide, and the balance is good milling ore.

WAR DANCE.—The lower level has been pushed ahead of all the old workings, and has cut a 10 foot vein of ore, 2 ft. of which is first-class and the balance good jigging ore. It is nearly 300 ft. to the surface, the ground above being unbroken and unprospected.

BINGHAM COUNTY.

Coal of excellent quality is said to have been discovered near Idaho Falls. There are two seams, one 22 ft. in thickness, the other 8 ft., one lying immediately over the other. Some 20 locations, of 160 acres each, have already been made.

CUSTER COUNTY.

CLAYTON MINING AND SMELTING COMPANY.—The new stack, completed in May, is now running regularly, reducing about 35 tons of ore per day, with a bullion output of three tons. The mines of the company are said to be doing well.

IDAHO COUNTY.

A strong copper lode, 5 ft. in width, is said to have been discovered in cañon of Rapid River, three miles above the Tom Pollock ranch. The croppings are reported to be unusually rich. Ten locations have been made on the ledge. It is a contact vein in a formation of lime and slate. The ore is reported to carry some gold and silver, while samples have assayed as high as 40% copper. The discovery was made by "Long" Thompson, formerly of Wood River. Rapid River heads on the northern slope of the Seven Devils Range, and the scene of the new strike is thought to be on the same mineral belt as the great copper camp. The distance from Pollock's to the Peacock mine is not more than 25 miles.

LEMHI COUNTY.

The Salmon City *Recorder* reports considerable excitement in that vicinity over the alleged discovery of a former channel of the Lemhi River which is very rich in gold. This channel lies between the mountains and the present bed of the river, is clearly defined, and has been traced for a distance of nearly 30 miles. It is thought by parties who have just been over the ground that all the gold in Bohannan and Kirtley bars comes from this source. Claims have been staked out for a distance of 16 miles. Some little prospecting has been done which has shown astonishing results.

OWYHEE COUNTY.

DELAMAR MINING COMPANY, LIMITED.—The directors have declared an interim dividend of 9d. per share, amounting to $72,000, for the quarter ending June 30.

SHOSHONE COUNTY.

MAMMOTH.—This mine is situated near Burke, on Cañon Creek. A shaft has been sunk to a depth of 200 ft., and $30,000 worth of ore is said to be now lying on the dump. A tunnel is being run to strike the lode about 250 ft. below the lowest point of the shaft. It will be 500 ft. in length, 200 ft. of which have already been finished. The ore is said to run 85 oz. in silver and 50% lead.

## ILLINOIS.

COAL.

PANA COAL COMPANY.—The tower and blacksmith shop at shaft No. 2 of this company's colliery at Pana was burned down on the 25th ult. The fire was caused by friction in the fanhouse. The 150 miners all escaped through pit No. 1. The loss is about $20,000.

LEAD.

A press dispatch says that while digging a well at Galena, on M. Blum's premises, a vein of lead ore was struck at a depth of 70 ft. in Galena. A company has been organized to work the deposit.

## KANSAS.

A special report shows that during the week ending July 18th the output of ore from the mining districts of Galena and Empire City was: Rough ore, pounds milled, 2,037,190; rough ore, pounds sold, 911,603; zinc ore, pounds sold, 981,133; lead ore, pounds sold, 45,000; sales aggregated a total value of $11,939.

## MICHIGAN.

COPPER.

ALLOUEZ MINING COMPANY.—Mr. John Stanton, the treasurer of this company, recently had an interview with the Boston *Traveller*, which we reproduce verbatim: "The indebtedness of the company at present is about $33,000, which, however, is fully covered by the fuel and supplies at the mine—these, of course, being available only as

worked up into copper. The directors are now scattered on their summer vacations, and just what action they will take in reference to another assessment is something that I cannot anticipate. I had hoped that there would not be any necessity for making another call on the stockholders. I am very tired of them. The burning of our rockhouse last February has, however, been a great draw back to us. Stoppage of production for over three months was an expensive business, as we could not afford to disband our working force, but had to find work for the greater part of it. So far as possible we utilized the force in rebuilding our rockhouse, opening ground, etc. The mine is now well equipped and in better shape than ever before for regular work, but, just as we get to that point, our work is hampered by lack of sufficient water for our stamp mill. This never happened to us before, but the existing drought is unexampled. Our agent has lived at the lake 36 years, but has never seen anything like it."

CENTENNIAL MINING COMPANY.—Advices received on the 27th ult. from this mine say that the mill has shut down for a few days to allow of the putting in of a new boiler. The rock now being taken out is yielding about 2% mineral.

LAKE SUPERIOR SMELTING COMPANY.—Articles of incorporation of this company, formed by a union of the Tamarack-Osceola Manufacturing Company and the Detroit & Lake Superior Smelting Company, have been filed. Forty-eight thousand shares of $25 per value, with $1,199,775 paid up capital, is the financial statement given. According to the articles there are nine directors, each holding one share of stock, as follows: J. S. Elton, F. J. Kingsbury, A. S. Chase, E B. Hinsdale, A. S. Bigelow, C. Van Burnt, Thos. Nelson, G. Stellwag and John Daniell. The corporation is to exist for 30 years, commencing July 3, 1891.

PENINSULA MINING COMPANY.—The stockholders of this company will hold a special meeting August 13th, to consider the question of selling the mine.

QUINCY MINING COMPANY —According to the Boston *Traveller*, the officials of this company insist that the present talk about a suit against Messrs. Mason and Smith in connection with the Pewabic purchase is pure "bluff." They admit that the bill in equity has been drawn, but they say that the suit will not be pushed, as the party that was to have brought the suit is neither in a position to maintain the action nor disposed to push it.

IRON—GEOEBIC RANGE.

METROPOLITAN IRON AND LAND COMPANY.—The Milwaukee *Evening Wisconsin* says in a recent issue: "On August 1st the Metropolitan Iron and Land Company will pay a dividend of $1.25 per share of $25. It is capitalized at $2,500,000. The dividend is a small one for the Norrie mine to pay and it has been delayed somewhat, but neither fact is due to any reduction in the mine's earning capacity. At the annual meeting early in the present year the company had a surplus of more than $1,000,000. At that time it was expected that the company, which the year before had paid $8.25 per share, besides a stock dividend of 25 per cent., would break the dividend-paying record, it having produced about 1,000,000 tons of ore during 1890 and sold it at very good prices. However, it was decided at the annual meeting to hold the surplus in reserve for a while instead of at once expending most of it in dividends. It is quite certain that the dividend of $1.25 per share, payable on August 1st, is not the only one that the Norrie will make this year. Several other small dividends, it is said, will be declared in the near future. The sales of Norrie up to date are considerably in excess of 500,000 tons. The output this year will not come up to last year's product in all probability, but the outlook, it is said, indicates a fairly good season."

## MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.)

JOPLIN, July 27.

The lead and zinc mines moved along during the past week at about the same pace as in the previous, although the sales of ore have been a little below the average. The average price paid for zinc was $23 per ton. Lead declined to $25 per 1,000. There is a general feeling that zinc ore will advance in price this week, as offers of $25.50 per ton have already been made. Following are the sales from the different camps:

Joplin mines, 1,193,030 lbs. zinc ore and 183,800 lead; value, $18,214.

Webb City mines, 404,710 lbs. zinc ore and 78,690 lead; value, $6,621.50.

Carterville mines, 1,422,770 lbs. zinc ore and 114,600 lead; value, $19,211.85.

Zincite mines, 324,790 lbs. zinc ore; value, $3,897.

Galena, Kans., mines 981,130 lbs. zinc ore and 45,000 lead; value, $11,939.

District, total value, $59,983.35.

Pittsburg, Kans., spelter output.—R. Lanyon & Co., 189,800 lbs.; S. H. Lanyon & Bro., 91,850 lbs.; W. & J. Lanyon, 96,750 lbs.; Granby M. & S. Co., 97,000 lbs.; Wier City Zinc Co., 187,000 lbs.; Pittsburg & St. Louis Zinc Co., 75,800 lbs.; total, 738,200 lbs.

The Little Nugget Mine, located on the Sterling Lead and Zinc Company's land, has been idle for some time, but is again producing, and last week turned in 10,590 lbs. zinc ore. The Manhattan mine, on the same land, turned in 12,740 lbs. Barbee & Glover have just opened a new mine on the Oswego land, and last week made a clean up of 33,460 lbs. zinc ore and 3,530 lbs. lead, the result of four days' washing with but two men underground.

Mr. L. C. Nilmoth, formerly one of the real estate and mining brokers of Joplin, closed his office and went to mining on the Interstate land just east of the city; to-day he opened a promising deposit of lead and zinc ore. The Star Lead and Zinc Company, which recently purchased a prospect in the Empire district, has opened a bonanza, and last week produced 40,000 lbs. of clean zinc ore. Mr. J. H. Strickland, M. E., has just returned from London, England, to make some further examinations of the zinc ore deposits of this district for English capitalists.

Allen & Harch, operating a mine on the Empire land, are producing at the rate of 12 to 15 tons of zinc ore per week. Mr. T. A. McClelland, of Kansas City, was in the city last week looking after his numerous mining interests, and while here determined to double the capacity of his plant on the South Joplin Mining Company's land, and closed a contract with Mr. Geo. T. Cooley for the erection of one of the latter's improved concentrating mills with a capacity of handling 40 tons of ore per day of 10 hours. English, Morse & Co. are to furnish the boiler, engine, and other machinery. Mr. Cooley is the patentee of Cooley's Self-contained Jig, and now has no less than 20 mills in operation in this district.

## MONTANA.

ANACONDA MINING COMPANY.—A force of men has been busy for some time in forking out both the St. Lawrence and the Anaconda shafts, at Butte. The Anaconda is running but one large tank, while in the St. Lawrence there are two. All the tanks are heavily coated with tar to keep them from being damaged by the copper in the water. At the Anaconda, says the *Inter-Mountain*, there seems to be more life than in any of the other mines of the company, even including the Chambers syndicate. The carpenters and the machinists are making some repairs, indicating that there will be greater work in contemplation than simply forking out of mine. The yards are all full to overflowing with timbers of all kinds and wood in an abundance. The syndicate mines present a scene of loneliness, no miners being at work.

JEFFERSON COUNTY.

COPPER BELL MINING COMPANY.—This company has paid a dividend of three cents a share, amounting to $13,500, July 20. This property, opened only two years ago, has steadily improved, as the vein has been more thoroughly opened, the ore chutes are enlarging with development, and the value of the ore is increasing. The shaft is now down 375 ft., and will be continued to the 500-ft. level.

SILVER BOW COUNTY.

MOSCOW.—A settlement of the contest over this mine has been effected. For some time the Parrot Silver and Copper Company has been seeking to secure possession of this property, but has been deterred from making a purchase by the contest over the title. The settlement of the suit of the National Mining Company v. Klaffky was made one of the conditions of the deal, and the two parties came to an amicable understanding on the 22d ult. Judgment has been entered for defendant by agreement, and the matter was thus disposed of. Some time since Klaffky had bonded the property to the Parrot for $60,000, and that bond was taken up by the company immediately after this action on the part of the court. The mine is situated on the hill adjoining the Pacific and north of the Gagnon. Considerable development work, largely increasing the value of the property, has been done of late.

SOCIETE ANONYME DES MINES DE LEXINGTON.—This company's mill has been in a state of partial suspension, only 25 stamps being in operation, owing to the making of some repairs and the lengthening of one of the stacks, the draft being insufficient. The mine is working at its full capacity. The miners are kept breaking ore, and when the mill resumes work at its full capacity there will be 500 tons in readiness in the mine, while the chutes on the surface will be full to overflowing. In this mine, says the Butte *Inter-Mountain*, the men are thoroughly guarded as to life and limb, the shaft is at all times covered and it is almost impossible for any one to meet with an accident under the regulations.

## NEVADA.

ELKO COUNTY.

TUSCARORA WATER COMPANY.—This company has re-elected the old directors and officers as follows: P. C. Hyman, president; Thomas Bell, vice-president and Daniel Meyer, John R. Spring and W. E. Davis, trustees. J. W. Pew was re-elected secretary.

(From our Special Correspondent.)

BELLE ISLE MINING COMPANY.—The No. 2 winze, 350 level, has been extended 20 ft.; the vein continues about 2½ ft. wide, and is producing good ore. The stopes above this level are looking well, and yielded during last week 8 cars of first-class, and 27 cars of second-class ore.

DEL MONTE MINING COMPANY.—The vein has been cut 3 ft., exposing ore of good grade all through, by the west cross cut, third level; joint No. 2, south drift, has been started on the vein.

NORTH BELLE ISLE MINING COMPANY.—The 500-ft. level has progressed 5 ft., the vein becoming wider. In the west cross-cut, 600 level, the rock is very hard and dry.

NORTH COMMONWEALTH MINING COMPANY.—From the first level there were 15 cars of ore hoisted, the average car assay being $350 per ton. The third level, joint west cross-cut, was advanced 21 ft., cutting the vein and showing good ore.

ESMERALDA COUNTY.

MOUNT DIABLO MINING COMPANY.—This company has received another bullion shipment, valued at $7,648.04. The mine is said to be yielding the usual amount of ore, which is being crushed at the company's mill at Soda Springs. The company paid a dividend of 20 cents per share on the 23d ult.

EUREKA COUNTY.

CORTEZ MINES, LIMITED.—During June the mill crushed 500 tons of ore, producing 47,750 oz. of silver Working expenses amounted to $14,900; development expenses, $5,470.

LINCOLN COUNTY.

LINCOLN.—This mine, east of Pioche, which is owned by Messrs. A. Werner, S. T. Godbe, and Wm. Lloyd, is reported to be looking very promising. The ledge was uncovered a fortnight ago and there is a good showing of ore.

NYE COUNTY.

Mr. W. J. Sheridan, a well-known miner of Nevada, who has just returned from the Montgomery district, says of the situation there: "Lumber for mining and building purposes is obtained at mills 40 miles distant, and costs $60 per M. at the camp; wood costs $8 to $12 per cord; from Daggett freight is 4 and 5 cents per pound Supplies can be had at California prices with freight added. Pork, fruit, vegetables, and feed for stock are obtained from White's and other ranches in adjacent valleys, at reasonable prices. At present there are about 40 men at Montgomery, and not likely to be any more before fall. There are enough miners there to supply any immediate demand, and as for prospecting it is out of the question during the summer months, when there is a scarcity of water, combined with great heat. If it were not for the lack of moisture in the atmosphere, and the excessive evaporation that is continually going on, the heat would be unbearable. The thermometer showed 116° in my tent the day I left, and on some of the deserts I have been told it actually climbs up to 135° in the shade. It may seem strange, but sickness is almost unknown in that section."

MOREY.—An important strike is said to have been made in this mine in the Morey district, which is being worked by Ernest Schendel. Between 40 and 50 tons of ore, reported to assay $700 per ton, have already been hoisted. The new discovery was made below the old workings of the mine.

STOREY COUNTY—COMSTOCK LODE.

CHOLLAR MINING COMPANY.—The official statement of the amount of ore worked and bullion produced at the Nevada mill for account of the Chollar mine for June shows: Tons worked, 2,280; gross proceeds in bullion, $31,332.50; cost of reduction, $15,960; net proceeds in bullion, $15,372.50; average assay of the ore per ton, $20.69; gross average yield per ton, $13.74; net average per ton, $6.74; per cent. worked, 66.

COMSTOCK MILL AND MINING COMPANY.—This company has, through its attorneys, Trenmor Coffin and W. S. Wood, commenced a new suit against Allen et al., embracing several parties owning land on the Carson River, to adjudicate the water rights of said stream. Recently Trenmor Coffin moved the dismissal of the old suit, which was granted, the court having held that notice could not be served by publication, but personally. Personal notice is now being served upon all the defendants named in the case.

UNION CONSOLIDATED MINING COMPANY.—At the annual meeting of this company the old directors were re-elected, with Robert Sherwood as president, Charles H. Fish, vice-president; A. W. Burrows, secretary, and D. B. Lyman, superintendent.

SAN FRANCISCO, July 23.

(From our Special Correspondent.)

W. R. Eckart, Consulting Engineer of the Comstock Pumping Association, has returned from his trip to Virginia City, and professes to be more than pleased at the work being done in draining the lower levels of the Gold Hill mines. The pumps in the Crown Point incline continue to work satisfactorily, and the Alta company is even exceeding the work called for in its contract. The Dow pumps are down 65 ft. below the 1,700 level, and are lowering the water in the Belcher mine adjoining, which stands 150 ft. above them, about 1 ft. per day. On the 1,700 level two Dow pumps will be put in, and two more on the 2,000 level when that point is reached, the joint capacity of which will be 3,000,000 gallons daily. At the bulkhead 65 ft. below the 1,700 level, Crown Point incline, the water has a temperature of 135°, and will not condense steam. Before the pump on the 1,700 level can be operated by steam connections with the

Belcher will have to be made. The pumps on the 1,350 level of the Alta have been recovered, and they are now bailing water flowing in from the Justice and other adjacent mines.

The following is a statement of the ore extracted from Comstock mines and milled with the average battery assays:

| MINE. | Tons. | Average assay value, July 18. |
|---|---|---|
| Con. Cal. & Va..... ..... .. | 2,360 | 23'85 |
| Chollar .. ..... .. ..... .... | 527 | 19'39 |
| Justice.... ..... ..... | 205 | 18'26 |
| Occidental..... ..... ..... | 210 | 14'90 |
| Savage... ..... ..... .... | 540 | 17'84 |

CROWN POINT MINING COMPANY.—The face of the south lateral drift, from the 300 level south winze, is in a mixture of clay and porphyry. Low grade quartz is showing in the west cross-cut, 500 level.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—On the 1,100 level, in the south drift from the shaft station, where the late discovery was made, good quality ore is being stoped. The various openings on the 1,300, 1,500 and 1,600 levels are yielding usual quantities of ore. On the 1,750 level, in working upward from bottom of winze No. 2, ore of fine quality is being taken. Winze No. 1, 40 ft. north from winze No. 2, has been sunk 58 ft. From this winze, 50 ft. down, an east drift advanced 10 ft. in a quartz formation with porphyry carrying low assays. During the week bullion was shipped to the Carson Mint valued at $20,912.82, and there is now on hand bullion valued at $25,000.

KENTUCK CONSOLIDATED MINING COMPANY.—The north drift from the 1,000 level east raise has been extended 38 ft., the face being in low-grade quartz. The ore is being followed south and up from the raise above the north cross-cut on this level. The ore varies from 1 to 2 ft. in width, and assays from $22 to $25 per ton.

OCCIDENTAL CONSOLIDATED MINING COMPANY.—The ore extracted during the week was taken from the 350,400, and 450 levels. A chute has been put in and preparations made for the extraction of ore from the 600 level. An east cross-cut was started from the main south drift, 750 level, the face being in low grade quartz.

SAVAGE MINING COMPANY.—The Sinaloa shaft, which is connected with the E street tunnel, has been repaired for 120 ft. On the 1,100 level the north drift from the Hale & Norcross side has been advanced 15 ft., making a total of 210 ft. from south boundary. The last 10 ft. of the drift is in low grade ore.

SIERRA NEVADA MINING COMPANY.—On the 630 level there was started a west drift which passed through 575 ft. of syenite and has now passed into ledge matter. This is the same red ledge that the West Consolidated Virginia is on, nearly 2,000 ft. south, and which the Savage, having made connection between the Sinaloa shaft, and the E street tunnel, has commenced sinking upon, being now 120 ft. down. In the Sierra Nevada what was originally maintained to be the west wall has thus been passed, and what is generally considered to be another ledge has been reached after passing through the country for 575 ft. This is the same ledge which was tapped in the Mexican three years ago on the 700 level, Ophir & Mexican line, when the water drowned them out.

#### WHITE PINE COUNTY.

OSCEOLA GRAVEL MINING COMPANY.—We learn that the Osceola preferred stockholders have increased their holdings by subscribing for an additional 33,000 shares, thus taking advantage of their right to call stock within 12 months after the completion of the 18-mile canal. The total holding in New York now amounts to 223,000 shares out of an issue of 420,000, the balance of 80,000 shares still remaining in the treasury. For over 60 days 2,500 24-hour inches have been brought into the mine, three giants being in constant use day and night. The company is still keeping its record as a nugget producer, nearly $5,000 in value having lately been picked up, one nugget weighing 53 oz.

### NEW MEXICO.

#### GRANT COUNTY.

MINERAL POINT ZINC COMPANY.—Shipments of zinc ore from Silver City have been discontinued and no more will be shipped from Hanover until the Silver City Northern Railroad is completed, when all the zinc ore produced in that camp will be shipped by rail direct instead of being sent to Silver City for shipment as has been done heretofore. The company, which operates all the developed mines at Hanover which produce high grade zinc ore, will save about $2 per ton in freight on every shipment made after the new railroad commences operations, and it is for this reason that the shipments have been temporarily discontinued. The company will be able to ship zinc sulphide under the new rates, and the output of the mines can be very largely increased. Shipments have been hitherto confined to carbonate ore.

#### SANTE FE COUNTY.

SANTE FE COPPER COMPANY.—A telegram received from J. McLaughlin, superintendent of this company, says: "Struck fine bunch of ore 200 ft. down incline; running north. Cannot tell the extent of it yet."

#### SOCORRO COUNTY.

LAST CHANCE MINING COMPANY.—It is reported that this company's mill at Silver Creek, in the Mongollon Mountains, will be started up as soon as the pipe line can be laid from the pump station. The distance is about 1¼ miles, and there is a fall of 50 ft. from the reservoir, into which the water is to be pumped from Silver Creek to the mill. The mill is said to be one of the most complete and conveniently arranged plants in the Territory. Proposals have been received by the company to deliver ore from the mine at the mill for $2 per ton. This includes cost of mining and development work necessary to keep the mine in proper condition. There is said to be a large body of ore opened above the tunnel level. The ore runs from $14 to $18 per ton.

### OREGON.

Among the many mineral resources of southern Oregon, quicksilver is rapidly becoming prominent, says a correspondent of the *Salt Lake Tribune*. Already there are two well-improved properties of this description in Douglas county, one of which, the Todd mine, is in full operation. Besides these, there are several prospects in Josephine county, which are considered valuable by mining men who have examined them. In October last a claim was located which it is believed contains one of the largest cinnabar deposits in the world. The location is on Black Butte mountain in Lane county. The original locations, three in number, were made by Thomas L. Kimball and Jesse H. Ray, who have since prospected the property thoroughly. Excavations have been made in seven places on the mountain, covering the entire length of the claim, and wherever the vein has been uncovered ore of the highest quality has been discovered. This mine has just been bonded by John B. McGee, of San Francisco, and associates for $100,000. The bond is due January 2, 1892. The Californians will at once put a large force of men at work to develop the property.

#### BAKER COUNTY.

BAISLEY-ELKHORN.—This mine, located nine miles west of Baker City, is making an output of about $10,000 per month. A force of 25 men is employed. This property has been in operation since Jan. 4, 1890; up to June 1, 1891, it had produced $134,345.

### PENNSYLVANIA.

Abraham S. Grim, of Allentown, who owns a 200-acre farm at Friedensville, Pa., recently discovered large deposits of silica on his property. Over 50 acres are known to be underlaid with the mineral, the veins varying in thickness. Samples of the silica were submitted to pottery experts at Trenton, who pronounced them admirably adapted for chinaware, and several manufacturers are reported to have entered into contracts with Mr. Grim to supply them with silica. Operations with 30 men will be begun at once and 500 tons per month will be raised.

#### COAL.

The contract for the Beech Creek extension into Cambria County has been given to Contractor Miller, of Lock Haven. This contract extends from Kerrmore, Clearfield County, to Patton, Cambria County. This road parallels the new Cambria and Clearfield road, now in process of construction on the Chest Creek, and will be a competing line under the Vanderbilt system. It is not known how much further the road will extend, but rumors say it will connect with the Baltimore & Ohio either at Johnstown or Pittsburg, via Strittmatter's crossing, one mile from Carrolltown, Nicktown, and thence through the Blacklick region; or the road may extend up the Chest Creek to Bradley Station, tunnel the divide, and get on the course of the Conemaugh. Either route will take it through Cambria's largest coal fields.

The Eastern syndicate which has been leasing land in the vicinity of New Florence, Westmoreland County, for the purpose of opening coal works, has, in testing for coal, discovered two veins of fire clay. The syndicate will now, it is said, in connection with the coal works, start a fire brick works. The find is a valuable one, as it has about 2,000 acres leased, all of which contains deposits of both coal and fire clay.

HILL FARM.—The fire which has been burning in this mine at Dunbar since the terrible disaster of June 16th, 1890, has finally been extinguished. The work of pumping out the water standing in the lower parts of the mine has been commenced.

LEHIGH VALLEY COAL COMPANY.—Fire caught in the Packer Colliery, near Ashland, on the 29th ult. The miners were working in the mines when the fire broke out, and were compelled to flee for their lives, finding an exit through an airway. The fire originated in the ropeway, a small opening between the surface and water level, in the mammoth vein, the outcrop of which has been ignited and is threatened with destruction. The burning of the timbers has caused the slope to fall in, and serious results are apprehended. Many months will elapse before the damage can be repaired, during which time 250 men will be idle. An effort is being made to smother the flames, and, if it fails, it will be necessary to drown the mines.

LEHIGH & WILKESBARRE COAL COMPANY.—Superintendent E. H. Lawall, of the Plymouth Colliery, Wilkesbarre, asserts positively that there has been no reduction in wages and none is contemplated, in spite of all reports to the contrary. He says that the imported men are all competent mine laborers, and are brought to add to the force, not to displace any of the men now at work.

WYOMING VALLEY COAL COMPANY.—The miners employed in the 6-ft. vein of the Harry E. colliery, of this company, at Forty Fort, have gone out on strike, the company refusing their ultimatum of granting 10 cents per car increase of wages. The men in the 11-ft. vein are working, but the two are inter-dependent, and cannot very well be run separately. If the strike is prolonged, as seems likely, for many of the men are about to leave for other places, the company will spend some months on repairs. The other colliery of the company is now idle for repairs.

#### NATURAL GAS.

At the Linton well, West Pike Run, Washington County, gas has been found in the Gantz sand. For a test the well was put down through the red rock and struck a very good sand 30 ft. thick and a strong enough pressure of gas to show 400 lbs. The new stratum has been named the Linton sand. Its depth is 2,740 ft.

Jones & Laughlin, of Pittsburg, have opened an important gas well in their lease in the McGahey pool, Washington County. The firm's lease comprises 700 acres. This is the second good well that has been struck in that field.

#### OIL.

WESTMORELAND & CAMBRIA OIL COMPANY.—This company's new well at Crabtree, on the Pennsylvania Railroad, began to yield on the 27th ult. Reports place its capacity at 50 barrels per hour.

### SOUTH DAKOTA.

#### LAWRENCE COUNTY.

BRISTOL MINING COMPANY.—This company of Galena has commenced to deliver 100 tons of ore contracted for by the D. & D. smelter, which is to take the entire dump, refuse and everything. The ore is used as flux and carries sufficient metal to give the owners of the mine a margin of profit. Present workings on the property are in a good grade of gold and silver ore.

GOLDEN REWARD CHLORINATION WORKS.—This company is now working 60 tons of ore daily. Everything at the works is running smoothly and satisfactorily. The new assay and office building is about finished.

### TENNESSEE.

#### ANDERSON COUNTY.

In describing the troubles at Briceville concerning the employment of convict labor, in our issue of July 25th, we stated erroneously the difficulties were at the mines of the Tennessee Coal, Iron and Railway Company, when we should have said Tennessee Coal Mining Company, being misled by the similarity in names.

### UTAH.

#### JUAB COUNTY.

Mr. C. H. Lawrence has purchased the rights of the Russell process for the Tintic district and proposes to erect a mill for the reduction of these ores. A four-car load lot is now being tested at the Marsac mill, Park City.

BULLION-BECK AND CHAMPION MINING COMPANY.—The working force is rapidly being increased. At present it numbers 235 men, and it is said that 65 more will be added shortly. The mine is making the largest output in its history. As the ore chutes are opened by the lower levels they are found to be as good, if not better, in size and quality, as in the upper workings.

CAROLINE.—This mine is making an output of about 500 tons of ore per month. The ore is of good grade.

EUREKA HILL MINING COMPANY.—It is said that the 1,000-ft. level has cut one of the largest bodies of ore ever opened in the mine.

#### SALT LAKE COUNTY.

NIAGARA MINING AND SMELTING COMPANY.—Work has been resumed on the Franklin tunnel and it is now being pushed ahead with three shifts of men. A plant of air drills is soon to be put in to hasten the work. An electric light plant is to be added at once, and, according to local papers, as soon as the financial arrangements of the company, now pending, are settled, a contract will be given for the erection of a large concentrating mill at the mouth of the tunnel. About August 20th a large force of miners will be put to work upon the property.

SAMPSON MINING COMPANY.—This company has been incorporated with a capital of $500,000 in shares of $1 each. The officers for the first year are: A. E. Hyde, president; H. H. Rea, vice-president; George A. Bier, treasurer, and J. Schenck, secretary, and these with W. M. Henry form the board of directors. The election of officers is to be on the fourth Tuesday of July each year. Each of the first four named incorporators takes 122,000 shares of the stock, and W. M. Henry takes 12,000 shares. The company owns the Sampson mine at Bingham, which has in the last six months become a large producer of lead-silver ores, and is now a good paying property. The mine is so located that it was necessary to haul the ore up hill to send it down to the Leadmill switch on the tramway. To save that expense a change is being made in the tramway by building 1,000 ft. of new track, thus shortening the road and saving the uphill haul. This work has stopped ore shipments temporarily.

SAN PETE COUNTY.

DESERET COAL AND COKE COMPANY.—This company, which is operating coal mines 12 miles east of Fairview, in the San Pete valley, expects to market 4,000 tons of coal this summer. A force of 12 men is employed. The coal vein is 12 ft. thick. The price received for the product at the mine is $1.25 per ton.

SUMMIT COUNTY.

According to the Salt Lake *Tribune*, the ore shipments from Park City mines, compiled from sampling works returns, during the first six months of the year were as follows:

| *Mine.* | *Tons.* | *Mine.* | *Tons.* |
|---|---|---|---|
| Ontario | 6,586 | Roaring Lion | 22 |
| Daly | 2,155 | Apex | 17 |
| Anchor | 4,385 | McDonald | 11 |
| Crescent | 1,489 | Mayflower | 6 |
| Wedge | 145 | Cumberland | 1 |
| Northland | 80 | | |
| Creole | 91 | Total | 15,028 |
| Woodside | 40 | | |

## WASHINGTON.

OKANOGAN COUNTY.

FOURTH OF JULY MINING COMPANY.—At the recent meeting of this company, says the Helena *Independent*, it was decided to stop work on the property for a time. The reason given is that owing to lack of cheap transportation facilities it does not pay to ship the ore taken out. It is thought that the Okanogan country will have a railroad before many months and then work will be resumed. There is a debt of some $:0,000 on the property, and this all the stockholders will have a chance to take up, pro rata. Those who assume their share of the debt will be allowed interest on the same at the rate of 1½ per cent. a month. A circular letter has been sent to the stockholders, notifying them of the action taken. Already a number have signified their intention of taking their share of the indebtedness.

## WEST VIRGINIA.

MERCER COUNTY.

NEWBURG-ORRELL COAL AND COKE COMPANY.—This company, operating in the Flat Top region, has closed down its works on account of scarcity of orders. The works will probably not resume before fall.

## WYOMING.

CONVERSE COUNTY.

DEER CREEK COAL COMPANY.—The mines of this company were discovered to be on fire on the 23d ult., when smoke commenced pouring from the main shaft. Every effort was made to reach the flames, but the fire only seemed to increase. On the following day it was decided to flood the mine. The company supplied fuel to the Fremont, Elkhorn & Missouri Valley Railway, and to towns on that road. It is believed the fire started in an underground stable from a lantern carelessly left there.

FREMONT COUNTY.

OVERLAND MINING COMPANY.—The result of the first crushing by this company showed a yield of 42 oz. gold from 35 tons of quartz. The company has a well-defined vein, 3 ft. wide on the surface, extending for 1,500 ft. in its property.

SWEETWATER COUNTY.

UNION PACIFIC COAL COMPANY.—As two Finlanders were passing the powder magazine of this company, two miles from Rock Springs, on the 17th ult., one fired at the building with a rifle, exploding the 1,213 kegs of black powder, and 550 lbs. of dynamite stored there. Both men were killed. The glass in most of the windows facing north in Rock Springs was broken, and the damage is estimated at several thousand dollars.

UINTA COUNTY.

There are said to be about 150 prospectors in the Victoria mining district at present, and the number is constantly increasing. A town-site, to which the name Parson City has been given, has been located, and application has been made for the establishment of a post office.

# FOREIGN MINING NEWS.

## BRITISH COLUMBIA.

(From our Special Correspondent).

HOT SPRINGS DIVISION.

NELSON, B. C., July 19.

A number of minor sales have been effected lately in the Hot Springs Camp. Among these, E. C. Carpenter, of Victoria, secured the Puritan, a fraction lying between the United and Mountain Maid; W. W. Sprague obtained the On Deck for $1,000, and Frank Ernest the Gap claim.

The Goat River District, near the boundary, is claiming considerable attention. The Alice claim, upon which considerable work has been done, shows up a ledge of good galena ore between 2 and 3 ft. wide, while new ledges of galena and of gray copper ore have been located quite recently. The clean ore is worth $125 to $150 per ton. An 18-ft. ledge of low-grade copper-silver ore, which closely resembles the croppings on the Grizzly Bear and Cariboo claims (Toad Mountain), has also been discovered.

COLUMBIA MINING COMPANY.—This company, whose headquarters are in Spokane, Wash., is developing the Crescent claim. The shaft is now down over 50 ft., with ore at the bottom.

SKYLINE.—A short time ago, A. D. Wheeler, of Ainsworth, bonded his interests in the Skyline, Krao, Maestro and other claims to E. C. Chambers, W. L. Hoge and F. E. Sargent, of Montana. Work has been resumed on the Skyline under the superintendence of Scott McDonald, of Wallace. A cross cut is being run from the bottom of the shaft (200 ft.) toward the ledge. Progress is being made at the rate of 3 ft. per day, and the ledge will probably be tapped before the end of the month.

SUNNYSIDE.—This claim, a northerly extension of the Number One, is showing some high-grade ore within a few feet of the surface. A sample recently taken from the 15-in. vein carried 1,092 oz. silver and 16% lead.

TAM O' SHANTER.—Richard Irwin, of the firm of Irwin, Hopper & Co., Montreal, P. Q., has purchased a one-half interest in this claim for $1,000 cash, and has secured a bond on the other one-half for $3,000. The claim is a recent location, and is situated on the east side of the lake. Men have been put to work on the property.

TENDERFOOT.—Richard Ashworth has purchased this property from W. W. Sprague for $7,000 cash. He also secured the Blalock, an adjoining undeveloped claim, for $500. Machinery will be put on the properties on Mr. Ashworth's return from Montana.

WEST KOOTENAY MINING COMPANY.—This company has purchased the Top, Thor, and Lookout claims for $100,000.

NELSON DISTRICT.

A small ledge (9-12 in.) of high grade galena—$125 to $395 per ton—has been discovered near Rover Creek. Other promising float has also been found, but prospecting is difficult, owing to the amount of wash on the ground.

Applications have been made for Crown grants of the Forest, Newmarket, Dandy, Iroquois and Democrat claims, all located in the neighborhood of the Silver King mine. A survey has also been made of the Royal Charter, and application will be made for a Crown grant as soon as the required amount of development work has been performed.

DANDY.—Active development is the order of the day under the superintendence of Lum Ray, recently of the Helena & Frisco mine, Wallace. New boarding-houses have been erected, and a new tunnel started on the east end of the Ollie, the west extension of the Dandy. Machinery will be placed on the property as soon as the new wagon-road is completed to this mine.

IVANHOE.—A one-half interest has been secured by R. G. Tatlow, of Vancouver. The claim is the second easterly extension of the Iroquois, but is undeveloped.

STADACONA SILVER-COPPER MINING COMPANY.—This company has taken up the bond on the Grizzly Bear and Silver Queen claims secured last fall by J. E. Boss, of Spokane, and has commenced work on the Grizzly Bear under the superintendence of J. Robertson. The trustees of the company are C. T. Dupont, C. P. Rand, P. C. Dunlevy, John Grant, and John Irving. J. E. Boss owns half of the stock. Both claims are near the Silver King, and are probably located on spurs of the Silver King ore body.

## CANADA.

PROVINCE OF QUEBEC.

The following is a list of the companies mining asbestos in this province: American Asbestos Company, Anglo-Canadian Asbestos Company, Laurier Mining Company, Scottish Canadian Asbestos Company, and United Asbestos Company, of Black Lake; Allan & Fleming, and Bowie mine, of Portland; Beaver Asbestos Company, Bell's Asbestos Company, Johnson's Asbestos Company, King Bros., Thetford Asbestos Company, and Ward Bros., of Thetford; Brompton Lake Asbestos Company, of Brompton Lake; Jeffrey Mine of Richmond; Megantic Mining Company, of Coleraine; Templeton Asbestos Company, of Templeton; Wolfestown Asbestos Company, of Wolfestown.

## FRANCE.

Quite a large number of new shafts are now being sunk in the coalfields of the north of France, writes Geo. G. André in the *Colliery Guardian*. The present period of prosperity is being utilized to further develop the industry of that district. In another ten years the production of coal in the departments of the Nord and the Pas-de-Calais will probably have increased some 50%. This is a matter which materially affects the future of the Belgian and English export trade in coal.

## GERMANY.

For some time past the "Georg" Brown Coal Works Company has been making deep borings for rock salt at Aschersleben, says *Industries*, and during the past year has discovered layers of rock salt, for which the company has obtained the right of working. A discovery of potassium salts has recently been made at a depth of 1,050 ft., and some works have been erected there.

## MEXICO.

LOWER CALIFORNIA.

CEDROS ISLAND MINING AND MILLING COMPANY.—This company has made a proposition to the Pacific Coast Steamship Company, owner of the steamer "Newbern," to have that vessel stop at Cedros Island on her trips to and from Mazatlan, guaranteeing that the steamer will be furnished a cargo of 500 tons of ore at the island on every up trip, the ore to be delivered in San Diego. On every south-bound trip the "Newbern" is to take supplies to the island.

NUEVO LEON.

EL CARMEN MINING COMPANY.—This company, operating in the Villaldama district, is shipping 3,000 tons of ore monthly to the Monterey smelters, but is now obliged to start up its reduction works at Guadalupe, in order to work the mines at full capacity. These works have three stacks with capacity of 150 tons of ore per day. The Villaldama ore is said by *El Minero Mexicano* to be the best fluxing ore in Mexico. A recent analysis of 300 carloads of ore showed the excess of metallic iron over silica to be 29%.

SAN LUIS POTOSI.

A correspondent of *El Minero Mexicano* writes from Catorce that every mine in that place, whether new or old, is now being worked. The Concepcion mine is naturally the best in the district on account of the strength and continuity of the vein formation, and although there have been barren streaks as in all mines, these have always been followed by more or less of a bonanza.

## NEW CALEDONIA.

In a report which will soon be published by the State Department, Commercial Agent Le Mescam, of Noumea, says: The area of New Caledonia is 2,000,000 square kilometers, and it includes about 800,000 square kilometers of nickel-producing land. About 80,000 square kilometers have already been granted to or applied for by divers mining companies, but about 20,000 square kilometers of the and are being actually worked, principally in districts easily reached by sea or rivers. Some of the best claims are not yet worked on account of the difficulties resulting from the absence of roads. The nickel ore is hydrous silicate of nickel and magnesia, with no traces of arsenic. It contains from 8% to 10% of metal, some samples containing as much as 16% of pure nickel. The value of 8% ore at shipping places is now 100 francs ($19.03) a ton. The mines are reported to be inexhaustible. Vessels coming to Noumea with loads of lumber from the Pacific Coast get return cargoes of iron, and save an expensive voyage to Australian ports. Important foundries and furnaces are now being erected in the vicinity of Noumea for the treatment of nickel ore.

## NEW SOUTH WALES.

Precious opal has been discovered at White Cliffs, 50 miles north of Wilcannia, by Mr. J. E. Carne, mineralogist to the Department of Mines, Sydney. The opal is found in crevices of sandstone and fossil wood, occurring in a formation resembling the desert sandstone beds of Queensland.

BROKEN HILL PROPRIETARY COMPANY, LIMITED.—The product of this company from January 1st to July 2d, 1891, was 129,313 tons of ore, from which were reduced 22,210 tons of base bullion, with 4,734,631 oz. silver.

## NICARAGUA.

A cable dispatch to the *Herald* from Granada says that gold nuggets of considerable size have been found in the old placer mines of Prinzapolka, and that great excitement in regard to the discovery prevails in Central America.

## PERU.

The London & Pacific Petroleum Company, an English corporation whose works are at Talara, in the north of Peru, has erected at Callao large tanks for the reception of refined lubricating oil, benzine and other manufactures of petroleum. It has also erected large tanks for holding the refuse of the petroleum, which is carried there in tank steamers.

## RUSSIA.

The probable richness of the recently discovered deposit of lead silver on the island Medweschja, in the Kern district of Archangel, has prompted the government to order a thorough investigation of the find, and to include the locality in the list of those in which mining is reserved for the state.

The mining and kindred industries of Ekaterinoslaw, Charkow, Tauria, Cherson, Tschernigow, Bessarabia, Podolia, Kiew and Wolynia will in the future be subjected to governmental inspection from the mining department established at Ekaterinslaw.

The Russian commission for regulation of the railroad rates is reducing the freight rates on all iron and steel and goods made thereof, with the intention of enabling the domestic manufacturers to undersell their foreign competitors.

## UNITED KINGDOM.

WALES.

DOLCOATH.—The accounts for the three months ending June 30th, presented at the shareholders' meeting, July 13th, showed that the labor costs had been £12,384 19s. 7d.; tribute, £1,576 12s.; merchants' bills, £6,170 7s. 7d; Camborne parish rates, £274 6s. 6d; bank charges, six months, £133 1s. 1d.; Miners' Hospital, £25; stannary dues, three months, £33 0s. 3d.; total debits, £20,597 7s. Black tin sold, 494 tons 10 cwt., at an average price of £54 6s. (less dues one eighteenth £1,492 0s. 5d.), producing £25,364 7s. 11d.; extra carriage, £71 9s. 2d; discounts, £41 18s. 5d. Total credits, £25,477 15s. 6d. Profit, £4,880 8s. 6d.; balance in favor of the mine, £10,290 19s. The yield of black tin was 60 lbs per ton.

## BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, July 31.

Albeit there is a considerable amount of building going on, and building circles have not been disturbed by any serious labor disturbances for some time past, dealers in building materials agree with singular unanimity that the general condition of this market is far from being healthy. And although they look forward to the fall for the usual increased activity they do not expect a very great improvement in the situation. This appears to be an "off year" for the trade.

**Brick.**—The market for brick, though generally active, is weak. A great deal has been sold, but the constant large arrivals prevent a decrease of the surplus. Quotations are mainly unchanged. Haverstraws, $4.75@$5.25; Uprivers, $4@$5; Jerseys, $4@$4.25; Pale, $2@$2.50.

**Lime.**—There is no spot supply, and very little lime on the way, although the demand is quite good, considering the time of the year. The kilns in the Maine lime district have been out for the past fortnight, and will not start again for some time. Quotations for Rockland lime are $1 for both common and finishing. State lime (Glens Falls), 90c.

**Lumber.**—A good deal is coming forward. Lath is still quoted very high, $2.25 per thousand, and the condition reported in our last week's issue prevails in this market.

**Cement.**—There is a fair amount of business doing at unchanged prices. Rosendale is quoted at 90c.

## CHEMICALS AND MINERALS.

New York, Friday Evening, July 31.

**Heavy Chemicals.**—With the exception of those chemicals which are never active at this season of the year, the market for heavy chemicals is generally good.

Caustic Soda.—Considerable business is going on, and the spot supply is very light. There is probably less caustic soda at present coming for sale in the market than has been the case for many months past. This is due to the fact that the Alkali Union has fixed prices which leave such a small margin of profit that it does not tempt our dealers to bring over heavy supplies. The quotations are: for 60% 325c.@330c., and 70-74%, 307½c. @312½c.

Carbonated Soda Ash.—The glass works have mostly shut down, and but little is doing in this article. We quote: 48%, 1·60@1·62½c, and 58%, 1·53¾@1·55c.

Caustic Soda Ash.—There is some demand for this material, but it seems to have gone out of fashion, and there is very little here. We quote 1·55@1·60c.

Sal Soda.—Stocks are light, the good demand for this chemical which has prevailed during the past few days having absorbed all there was here. We quote: 1·10@1·12½c.

Bleaching Powder.—At present bleach is the most interesting article in this market. The announcement was made that the Alkali Union had appointed Messrs. J. L. & D. S. Riker, of this city, sole agents in the United States for bleaching powder. This, united to cable advices of a trans-Atlantic advance in prices, had an immediate effect on the local trade, and to-day the article is difficult to quote accurately, prices being given at 1·90@2c.

**Acid.**—The general features which have characterized this market for some time past are unchanged. Manufacturers report business as being in a good condition in this vicinity, but we hear of very low prices elsewhere, notably in Connecticut. Our last week's quotations remain: Acid, per 100 pounds in New York and vicinity: Acetic, $1.65@$1.75; alum, $1.55@$1.75; muriatic, 18°, 80c.@$1; muriatic, 20°, 90c.@$1.10; muriatic, 22°, $1@$1.20; nitric, 40°, is selling for $4.50, and from that upward according to quality, etc.; nitric, 42°, $5@$6; oxalic, 7¼@7½c.; sulphuric, 60°, 75c.@$1; sulphuric, 66°, 85c.@$1; tartaric, 33@34c.

Brimstone.—The market has improved slightly, being somewhat firmer, although it is still far from healthy. For future shipments, August and September, quotations are: Best unmixed seconds, $24.50; best unmixed thirds, $24.

**Fertilizers.**—Midsummer stagnation continues to hold sway over the market for fertilizing chemicals. Very little is doing at present, and we can but repeat our last quotations. Sulphate of ammonia 3·05@3·10c. Bone sulphate, at 3·02½@3·05c. Dried blood, 1.95@2c. Tankage, $19@$21. Azotine, 1·95c. Bone meal, $22.50@$23.50; raw, $24@$28. Fish scrap, $21.50@$22.50. Acidulated fish scrap, $11·50.

Double Manure Salts.—We quote the syndicate price of 1·10@1·12½c. for 48%. For 90% to 95% basis, 90% foreign invoice, weights and lists, 2·07½@2·10c. Lots under 50 tons proportionately higher.

South Carolina phosphate rock is unchanged. We quote for land rock $7@$8, wet and dry respectively, f. o. b. vessels at mines, and $7.25@$8.25 f. o. b. cars. There is but little high-grade river rock in the market. Low grades taken from marshes are selling at about $7.25. Our Charleston correspondent writes: "Prices and demand unchanged. The high grades are the most in demand, and many of the mines have sold far ahead. Many are not so well up in their contracts as they would like to be; some of the manufacturers who have been depending on Florida are uncomfortably close."

Messrs. Couper, Millar & Co., writing from London, under date July 16th, say: "We have again to report a dull market in phosphates so far as Europe is concerned, and manufacturers are still indisposed to operate for forward delivery. As a rule they bought last year more heavily than usual in anticipation of a larger consumption of manures, but the trade has been below the average, and this naturally leads to the adoption of the present cautious policy. One feature worthy of notice is that, while the total production of Florida up to date is very disappointing, the quantity of high-grade rock offering from there is in excess of what our market at present requires. There is always an outlet for a certain quantity of phosphate testing 70% and upward, but when this quantity has been reached it is only possible to sell more by foregoing the premium usually paid for the higher test and reducing the price per unit. We have ample proof of this at the present time, when 70% Florida rock can be bought cheaper per unit than the 60% Peace River. The reason is not far to seek, for manufacturers who are accustomed to buy Carolina phosphate naturally prefer to take something of the same type rather than a material of which they have never had experience, which necessitates an entire change in their manner of working and gives a "super" entirely different in appearance to that which their customers look for. There are would-be buyers of Coosaw phosphate in the market but no sellers, the difficulties with the State being still unsettled. In Charleston prices have been advanced 50 cents per ton, and dried rock is now quoted at $8 per ton f. o. b., as against $7 a year ago. In Florida the raisers of river rock are harassed with labor troubles, low water, and difficulties brewing with the State authorities on the question of what are navigable streams, and so subject to the new phosphate law. Some phosphate has been offering very cheaply in sympathy with Florida, but principally from second hands, many of the leading raisers having withdrawn from the market. In Mineral Phosphates.—Canadian 80% is practically all sold, but a small quantity might be secured at 14d. per unit, with ½th rise ex-ship, and 60%@70% at 8d. Florida 70% is quoted at 10d., 75% at 11d. River rock 60% at 10½d. Somme 70% for prompt at 12d. to 13d. per unit, according to port, and other qualities at proportionate prices. Belgian 40% at say 5d., f. o. b. Antwerp. Osso phosphate is still offering cheaply from second hands, and is worth attention.

Kainit.—A very quiet market. A couple of cargoes were discharged during the week, and both delivered on old contracts. We quote $8.75@$9.25, according to quantity.

Muriate of Potash.—There is a quiet, steady trade going on. During the week sales aggregated 300 tons, and arrivals 200 tons. Quotations: $1.77½@$1.87½, according to quantity.

Nitrate of Soda.—This market continues in the demoralized condition last reported. If anything, it is worse. There is a great deal of stock, but no arrivals have come during the week. Spot quotations are $1.85. Dealers generally refuse to make prices for future shipments.

From Messrs. Montgomery & Co.'s circular, dated June 30th, we take the following: The effect of the civil war upon the nitrate industry and upon the nitrate market has been very marked. For several weeks in February and March many of the nitrate works were practically closed, and in one or two cases the works were partially destroyed. Shipments in Iquique and Pisagua were entirely suspended, as in the months named the first stage in the war was being fought out in those places, which were eventually captured by the Congressional forces, and they proving themselves sufficiently strong to retain them, a degree of confidence returned, the manufacture and shipment of nitrate upon a moderate scale were soon resumed, and has continued until now.

At the beginning of the year the price of nitrate had just experienced the most severe fall which it ever had, 7s. 4d.@7s. 6d. per cwt. having been touched. A natural though small reaction took place early in January. As the year crept on, the civil war having broken out and continuing, although many thought it would be of but a few weeks' duration, the price hardened, and the market maintained itself under a load of supplies which in other and more peaceful circumstances would have insured an uneasy and declining tendency. In the months of March and April the advance in price became very decided, as high as 9s. 6d. per cwt. being touched for cargoes then due, while cargoes sailing in spring and summer, were difficult to buy at 9s. 3d. to 9s. 4½d. The year opened with a visible supply of no less than 710,000 tons. This quantity has been augmented by 207,000 tons shipped during January to June. Six hundred and forty thousand tons have been consumed in Europe in the half year, which closes with a visible supply of 277,000 tons, of which 146,000 tons are in warehouse, and 131,000 tons afloat. The visible supply on 30th June, 1890, was 254,000 tons. The consumption is the largest on record, although not quite reaching to the figures expected, owing, no doubt, to the heavy advance which took place in price and, perhaps, although in a less degree, to the long, tedious winter, and the consequently late spring. The increase amounts to 9% over the figures of the preceding year, Germany leading with 22%, and Holland following with 20%, while the other continental countries and the United Kingdom have been practically stationary. Considering the very large quantity of nitrate of soda now annually consumed in Europe, it cannot be said that the supply in sight is at all excessive. The outlook as regards further supply is very uncertain, for the following reasons:

(*a*) The civil war in Chili is still raging, and, while shipments are proceeding on a moderate scale under the protection of the Congressional forces, the President does not disguise his desire and determination to turn the "nitrate speculators" (as he terms them) out of Tarapacá. Any such thing happening now, or a serious attempt being made to do so, would probably jeopardize the shipment in sufficient time of a great portion of the supply of nitrate which is being depended upon for agricultural use in 1892.

(*b*) Owing to the war, ships have been headed away from Chili during the past few months. Homeward freights from other parts of the world are good, with certainty to the ship of being loaded, which certainty is non-existent in the case of Chili. Consequently, the supply of tonnage is apparently much short of probable requirements if a full supply of nitrate is to be shipped.

(*c*) The combination of producers to restrict the supply has raised its head once more, and a provisional agreement has been signed, by which the manufacture of nitrate shall be carried on during seven months only of this year, and the total shipments shall not exceed 18,000.000 quintals. 23,000,000 quintals were shipped last year.

The consumption in the United States has been much on the same lines as those of last year. Owing to the Chilian war, the supply showed signs of exhaustion, but this was speedily made good by a few shipments from Europe. The consumption in Europe for the first six months of the past three years has been as follows:

| | 1889. | 1890. | 1891. |
|---|---|---|---|
| Continent, tons .. ..... | 359,000 | 495,000 | 550.000 |
| United Kingdom, tons .... | 73,000 | 91,000 | 90,000 |
| | 432,000 | 586,000 | 640,000 |

The *South American Journal* gives the world's consumption for the 12 months ending June 30th, 1889, 1890 and 1891 as follows:

| | 1889. | 1890. | 1891. |
|---|---|---|---|
| Continent.....Tons..... | 546,000 | 700,000 | 721,000 |
| United Kingdom.." .... | 100,000 | 123,000 | 118,000 |
| United States....." .... | 60,000 | 75,000 | 90,000 |
| | 706,000 | 898,000 | 929,000 |
| The shipments for the same periods have been. | 853,000 | 909,000 | 946,000 |

**Liverpool.** July 17.

(Special Correspondence by Geo. C. Blackwell.)

Manganese: There are no arrivals to report this week. Prices are firm and unaltered. Magnesite: Stocks large; prices as last reported. Raw ground, £6 10s.; calcined, £12 10s. Bauxite (Irish Hill brand) in strong demand at full prices; first lump, 20s.; seconds, 16s., and thirds, 12s. Barytes: Carbonate easy, while sulphate of fine quality is scarce, bringing full prices. "Angel White," No. 1, 70s.; No. 2, 60@65s.; No. 3, 45s. Pumicestone: Picked lump quieter; ground, more doing. Emery stone: Good qualities in fair demand. No. 1 lump, £5 10s.@£6; smalls, £3@£5 10s. Fullers' earth unchanged; best lump, 55s.; fine impalpable ground, £7; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda and tungsten metal continue scarce, sales being made at advanced figures. Chromo ore: High grades continue in demand at full market prices. Antimony ore and metal: Prices still lower. Asbestos firm, especially for Canadian rock. Calamine: High qualities stronger. Strontia sulphate (celestine): More inquiry. Limespar in more demand; English manufactured old G. G. F. brand in request at 50s. (ground). Felspar and fluorspar easier. Ferro-manganese: 75%, £12; 85%, £13 15s. Plumbago: Best qualities sought for; Spanish, £6; best Ceylon lump at last quotations; Italian and Bohemian, £4 to £12 per ton. "Founders," £5 to £6; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn).

(Special Correspondence of Jos. P. Brunner & Co.)

July 22.

Business continues quiet in heavy chemicals, although at the same time a fair number of transactions are reported for some lines. The Alkali Company has announced an interim dividend on their ordinary shares for the period ending June 30th, at the rate of 5% per annum, payable on August 28th next.

Soda Ash.—Quiet, and only special brands inquired for. Quotations are unchanged as follows: Caustic Ash 48%, £5 2s. 6d. per ton; 58%, £6 4s. per ton; Carb. Ash 48%, £5 7s. 6d. per ton; 58%, £6 10s. per ton, all net cash. Special brands held for premium on these figures.

Soda Crystals are in request and very firm at £3 5s. to £3 7s. 6d. per ton, net cash.

Caustic Soda is dull, although some orders have been placed for special brands. Prices are unchanged, as follows: 60%, £9 10s. to £9 15s. per ton; 70%, £10 15s. to £11 per ton; 74%, £11 15s. to £12 per ton; 76%, £13 to £13 5s. per ton, all net cash.

Bleaching powder.—A number of transactions took place last week in the expectation that the price would shortly be advanced. So far this week, however, the Alkali Company has declined to

make any further sales or give any quotations, as it has now under discussion the question of advancing the price. It is anticipated that the announcement of an advance will be made to-day, and we will probably be able to advise you before the close of this letter.

Chlorate of potash is more inquired for, but there is little actual business to report. Price is steady at 5⅝d. per lb., less 5%.

Bicarb soda in fair demand at £6 15s.@£7 per ton, less 2½% for one cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia shows no improvement, as demand is quite nominal. Good gray 24% in single bags we quote at £10 10s.@£10 12s. 6d. per ton, and 25% in double bags at £11@£11 5s. per ton, less 2½% f. o. b. Liverpool.

Since writing above the Alkali company has announced an advance in price of bleach to £8 per ton. The advance has been expected, but a further announcement that the Alkali company has appointed Messrs. Riker, of New York, as sole agents for the sale of this article in the United States and Canada, has come as a "bomb" on the market.

## MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Birmingham, Ala., Pittsburg, St. Louis, London, and Paris, see pages 141 and 142.]

New York, Friday Evening, July 31.

Since the financial difficulties of last November, the stock market generally has been weak. The mining market, in sympathy with railroad stocks and the money market, has been pretty much in the same condition. To a considerable extent the public is to blame for the present state of affairs, especially in the case of the market for mining shares. The old law that "a burnt child dreads the fire" is doubtless true, and the remembrance of fleeces shorn during the old days of "wild cats" probably keeps many lambs from venturing into the pastures of the Mining Exchange.

The week under review in nowise differs from its immediate predecessors. The long-hoped-for boom is still apparently as far off as ever. Later advices from San Francisco report a stronger market there, in which case a similar condition would be experienced here. But the movement—if movement there be—is so incipient that nothing definite can be said of it. There seemed a slightly improved inquiry for various stocks in the local market during the week, but no feature worthy of notice can be recorded.

The Comstocks were in greater demand, and better prices generally were obtained. Of Belcher 100 shares were sold at 60c. Consolidated California & Virginia opened at $6, and, under sales of 300 shares, declined 50 cents. Crown Point advanced from $1.20 to $1.50, and Ophir from $3.40 to $3.75. Gould & Curry shows a solitary sale at $1.80; Savage advanced from $1.55 to $2.25, with 300 shares sold. Yellow Jacket, under sales of 450 shares, advanced from $1.75 to $2.

Alta appeared in some demand at 50c. to 80c. Best & Belcher was steady at $3 to $3.30, and Chollar at from $1.85 to $2.25. Of Comstock Tunnel 3,100 shares changed hands at 16c. to 17c. Mexican was dealt in to the extent of 550 shares at $2.30 to $2.75. Occidental shows transactions aggregating 700 shares at $1.20 to $1.25, and Utah 400 shares at 95c. to $1.10. Potosi was quiet at $4 to $4.10, and Union Consolidated disposed of 200 shares at $3.25 to $3.45.

Of the Tuscarora stocks only one was dealt in—300 shares of Nevada Queen at 27c. Eureka Consolidated shows sales of 275 shares at $3@$3.25, and Mt. Diablo, of 50 shares at $2.25.

Of the California stocks we note one sale of Plymouth at $2.25; of Belmont, 1,950 shares were sold at 78@80c. and 7,700 shares of Brunswick at 8@10c. There was a solitary sale of 200 shares of Emmett at 63c. The official lists of the Exchange show transactions in Astoria aggregating 7,500 shares at 1@2c.

Colorado stocks were more in request than last week. We note a solitary sale of 500 shares of Catalpa at 30c., and an equal number of Leadville Consolidated at 9c.; Robinson Consolidated disposed of 100 shares at 50c., and Small Hopes of 300 shares at 70c. There are reported sales of 100 shares of Crescent at 15@16c.

Alice had a single sale of 500 shares at $1.60, which is lower than for some time past. None was pressing on the market.

Horn Silver was quiet at $3.45 to $3.50. Ontario has one sale of 50 shares at $39.25.

El Cristo returned to the Exchange once more and disposed of 200 shares at 40@50c. Of Homestake there was one sale of 10 shares at $11.25, and Iron Hill one of 400 shares at 17@19c.

### Boston. July 30.

(From our Special Correspondent.)

A dull and lifeless market, with a downward tendency in prices, is about the story for copper stocks during the past week. There is a dearth of orders to either buy or sell, and not much to encourage operators in the outlook for the near future.

The feature of the week was the sudden drop in Calumet & Hecla from $250 to $240½, and a subsequent rally to $245 on a forced sale of 17 shares. This shows the uncertain character of the market in such times as the present. Quincy also showed a weakness and declined from $110 to $102 on small sales, but Tamarack was conspicuous for its firmness at $150, at which price all the sales were made.

The Montana stocks were fairly well maintained, but transactions were light. Boston & Montana sold up to $42½ and declined to $41¾. Butte was a little heavy, selling down to $14½, a decline of the fraction.

Centennial sold at $14, but rallied later to $14½, while Franklin was quite steady at $16. Kearsarge was heavy and sold down to $11, a decline of $1. Osceola very dull, only 100 shares changing hands at $36, a decline of $1.

Atlantic sold down from $16 to $14 on the report that the August dividend would be passed. Allouez was freely offered and declined to $2. Rumors of another assessment were quite prevalent. Huron declined to 85c. and Arnold sold at same price.

Santa Fe was in little better demand, and about 2,000 shares were sold at 50c.

3 P. M.—Since the morning call the market has been heavy and lower. Boston and Montana declined, to $41, Butte & Boston to $14, Franklin to $15½, Huron to 75c., and Quincy to $100, closing week all around. There is nothing doing in silver mining stocks.

### Denver.

Prices and sales for the week ending July 25th, 1891:

| Company. | Opening. | H. | L. | Closing. Bid. | Sales. |
|---|---|---|---|---|---|
| Mines. | | | | | |
| Alleghany | 13b | .... | .... | .... | ..... |
| Amity | 02¼b | 02¾ | 02½ | 02¾ | 6,500 |
| Bangkok-C.-B | 06½b | 06¾ | *06½ | 06½ | 9,400 |
| Bates-Hunter | 69a | 67 | 57 | 58 | 17,700 |
| Brownlow | 04b | 05¼ | 05 | 05 | 900 |
| Calliope | 16b | .... | .... | 15 | ..... |
| Cash | 15b | .... | .... | 15 | ..... |
| Clay County | 124a | 117 | 116 | .... | 1,400 |
| Gettysburg | 18a | .... | .... | 15 | ..... |
| Gold Rock | 59b | *63 | 59 | 61 | 4,100 |
| Leavenworth | 16a | .... | .... | 06 | ..... |
| Little Rule | 110a | *110 | *110 | 110 | 200 |
| Matchless | 300b | .... | .... | 300 | ..... |
| May-Mazeppa | 121b | 124 | 119 | 123 | 1,700 |
| Oro | 100b | .... | .... | 100 | ..... |
| Pay Rock | *02b | .... | .... | .... | ..... |
| Puzzler | 01½b | 02¾ | 02¼ | 02¾ | 2,500 |
| Reed National | 60b | .... | .... | .... | ..... |
| Rialto | 100b | 109 | 109 | 109 | 2,900 |
| Running Lode | 20½b | 21 | 21 | 20¾ | 100 |
| Whale | 30b | 32 | 29 | 29 | 600 |
| Bal. Smuggler | 158b | *57½ | 55 | 55 | 700 |
| Prospects. | | | | | |
| Argonaut | 20a | .... | .... | 07¼ | ..... |
| Big Indian | 10b | .... | .... | .... | ..... |
| Big Six | 07b | .... | | 06 | ..... |
| Century | 30a | 41 | 40 | .... | 200 |
| Claudia J | 19a | 07¼ | 05¼ | 04½ | 800 |
| Nat. G. & Oil Co | 11 | *16 | 11 | 14½ | 67,500 |
| Diamond B | 03½ | 05 | 03½ | 04½ | 31,000 |
| Emmons | 45b | *47½ | 45 | 45 | 11,900 |
| Golden Treas | 30b | †36 | †35 | †34 | 3,000 |
| Ironclad | 02¾b | *04¾ | 03 | 04½ | 22,700 |
| John Jay | 04b | 04 | 04 | 04 | 1,100 |
| Justice | 12¾b | 13 | 12¾ | 12½ | 300 |
| Legal Tender | 02¼b | *02¾ | 02¼ | 02½ | 3,300 |
| Morning Glim | .... | .... | .... | .... | ..... |
| Park Consolidated | 15a | .... | .... | 09 | ..... |
| Potosi | 05b | 05¼ | 05 | 05¼ | 3,500 |
| Total | | | | | 194,000 |
| Acc't Rainey | | | | | 40,000 |
| Grand Total | | | | | 234,000 |

* Buyer 30. † Buyer 60. ‡ Seller 60. § Seller 30. a Asked. b Bid.

### Lake Superior Iron, Gold and Silver Stocks

(Special Report by A. M. Helmer, Milwaukee, Wis.)

*Iron.*

| | |
|---|---|
| Gogebic Range: | |
| Anvil | $3.50 |
| Ashland | 51.00 |
| Aurora | 9.50 |
| Bessemer Consolidated Bonds | 20% |
| Brotherton | 2.50 |
| Cary | .... |
| Colby | .... |
| Father Hennepin | .... |
| Germania | 9.00 |
| Gogebic Iron Syndicate | .25 |
| Iron Belt | 1.50 |
| Metropolitan Land and Iron Co | 62.50 |
| Montreal | 10.50 |
| North Pabst | 2.25 |
| Northern Chief | 30.00 |
| Odanah | 13.50 |
| Pabst | .... |
| Palm | 1.75 |
| Pence | 1.50 |
| Penokee and Gogebic Developm. Co. | .... |
| Ruby | .... |
| Ryan | .35 |
| Section 33 | 13.50 |
| Windsor | .... |
| Wisconsin Iron and Steel Co | .60 |
| Marquette Range: | |
| American | $2.25 |
| Champion | 75.00 |
| Cleveland | 16.00 |
| Cleveland Cliff Iron Co | .... |
| East New York | 2.00 |
| Humboldt | .... |
| Iron Cliffs | .... |
| Jackson | 104.00 |
| Lake Superior | 54.00 |
| Marquette Range: | |
| Michigamme | .... |
| Milwaukee Iron Co. | $5.00 |
| Negaunee | .... |
| Pittsburg and Lake Angeline | 140.00 |
| Republic | 26.00 |
| Riverside | 2.00 |
| Menominee Range: | |
| Aragon | .... |
| Chapin | .... |
| Commonwealth | 10.50 |
| Florence | .... |
| Hamilton Ore Co | .... |
| Lincoln | 2.00 |
| Mansfield | .... |
| Mastodon | .... |
| Metropolitan | 60.00 |
| Monitor | .... |
| Norway | .... |
| Paint River | .... |
| Pewabic | .... |
| Quinnesec | .... |
| Sheldon and Shafer | .... |
| Sheridan | 5.00 |
| Vulcan | .... |
| Youngstown | .... |
| Vermilion Range: | |
| Chandler | 37.00 |
| Chicago and Minnesota Ore Co | 100.00 |
| Clingstone | .25 |
| Inter Ocean | .25 |
| Minnesota Ore Co. | 72.50 |
| Northwestern | .25 |
| Pioneer | .... |
| Vermilion | .25 |
| Vermilion P. & L. Co | 2 25 |
| *Gold and Silver.* | |
| Badger Silver Mining Co | 3.00 |
| Michigan Gold Co. | .30 |
| Peninsula Gold Mining Co | .... |
| Ropes Gold and Silver Co | 1.65 |

### San Francisco. July 28.

(From our Special Correspondent.)

The mining market developed more activity during the past week and prices recovered somewhat from the depression of a week ago. The general tone, however, does not indicate any great strength, and the advance in prices, it is believed, was partly caused by a demand for stocks for short sellers, who freely sold at the lower rates ruling last week.

Consolidated California & Virginia was strong and active at $5.87½ on Wednesday, on the strength of a rumor that there was an improvement in the east drift from the winze 50 ft. below the 1,750 level, and also in the north crosscut, 1,500 level, where some fine ore is said to have been found. To-day the stock fell again to $5.62½ and scattering sales.

Ophir sold for $2.15; Mexican, $2.15; Sierra Nevada, $2.40, and Union, $2.05.

Bullion and Potosi have been the strongest features of the week's trading, the former selling up to $3 and the latter to $4. Both stocks have been active at these prices, which declined, however, to-day in the formal session to $2.90 and $3.90, respectively. Of the other middle Comstocks, Chollar sold at $1.90, a small advance, and Hale & Norcross at $1.70.

In the Gold Hill groups prices have been steady, Crown Point ruling at $1.15, Overman $2, and Yellow Jacket $1.50.

Of the outside stocks fair sales have been made of Belle Isle at 60 cents and North Belle Isle at 35 cents, these stocks being the only ones of the Tuscarora group which have been moving. Small sales of Bodie have been made at 80 cents. The Quijotoas have been left severely alone.

The opinion seems general that the present low figures will continue until at least the opening of August, but what basis there is for such opinion when the mines are showing as they do, is unexplainable. However, as Mr. Mackay is now presiding over the destinies of the Consolidated California & Virginia and other North End mines during the absence of Superintendent Lyman, the unexpected may happen.

### St. Louis. July 29.

(From our Special Correspondent.)

St. Louis markets continue very quiet and only a few trades a week are transacted. Prices continue to see-saw up and down, but the fluctuations amount to only a few cents. Granite Mountain improved considerably over last week's closing quotation, and, while no sales were made, is decidedly stronger. Its shipments for the week amounted to 45 bars containing 57,200 oz. silver and 71 oz. gold. The stock opened on call at $22, and rose steadily during the week to $23.50, at which figure it closed.

Elizabeth opened at $1.75 with a sale of 150 shares, and later sold at $1.70. On Friday 100 shares sold at $1.75, but immediately afterward the market fell to $1.72½, 150 shares going at that price. Since then the market has fallen to $1.60, with no sales.

Montrose opened strong at 70c., and 300 shares sold at that figure. On Monday 200 shares sold at 75c. On Tuesday not a bid was made, and to-day the stock is firm at 75c.

Although the amount of business transacted in Mickey Breen was small, the market was much stronger. It opened at 50c. and closed at 52½c., only one sale of 100 shares at 50c. being made. At one time the stock was quoted at 45c.

American & Nettie had one sale of 100 shares at 25c.; the market has, however, been very quiet throughout the week.

A sale of 2,500 shares of Little Albert stock was made on Friday. The market is very quiet at 1½c.

Silver Age fell from an opening quotation of $1.15 to $1; there was very little inquiry for the stock.

The smelter of the Yuma mine was closed down on the 15th and will not start again until September 1st. A change is to be made in the management of the company, Mr. Frank Nicholson retiring.

### Salt Lake City.

Prices and sales for the week ending July 25, 1891.

| Name and Location of Company. | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| Alice, Mont | 1.50 | 1.60 | 1.40 | 1.55 | 100 |
| Alliance, Utah | .... | .... | .... | .... | .... |
| Anchor, Utah | 5.25 | 5.80 | 5.25 | 5.80 | .... |
| Apex, Utah | .16 | .17½ | .15 | .16½ | 11,000 |
| Barnes Sulphur, Utah | .02 | .02½ | .01 | .02 | 3,500 |
| Big Hole Placer, Mont. | .16 | .18 | .15 | .17 | .... |
| Centen'l Eureka, Utah | 52.00 | 52.00 | 52.00 | 52.00 | .... |
| Cleveland Cons'l, Utah | .31 | .35 | .30 | .31 | 500 |
| Congo, Utah | .16 | .19 | .16 | .19 | 10.500 |
| Crescent, Utah | .56 | .67½ | .56 | .67½ | 2,250 |
| Daly, Utah | 20.25 | 20.50 | 20.25 | 20.50 | 45 |
| Glencoe, Utah | 6.00 | 6.00 | 5.00 | 5 75 | 300 |
| Horn Silver, Utah | 3.10 | 3.20 | 3.10 | 3.20 | .... |
| Malad Con., Idaho | .03 | .03½ | .02¾ | .02¾ | 8,000 |
| Mammoth, Utah | 2.75 | 2.75 | 2.75 | 2.75 | .... |
| North Eureka, Utah | .13 | .15 | .12 | .12 | 14,000 |
| Northern Spy, Utah | .... | .... | .... | .... | .... |
| Ontario, Utah | 38.50 | 38.50 | 38.50 | 38.50 | .... |
| Stanley, Utah | .10 | .10 | .06 | .08 | 9,000 |
| Utah L & C. Co., Utah | 8.00 | 8.00 | 8.00 | 8.00 | 100 |
| Utah Oil Co., Utah | .... | .... | .... | .... | .... |
| Woodside, Utah | .... | .... | .... | .... | .... |
| Total sales | | | | | 59,295 |

## DIVIDENDS.

Colorado Coal & Iron Company; Coupon No. 23, due August 1st, on the bonds of this company, will be paid on and after that date at the office, Nos. 45 and 47 Wall street.

Granite Mountain Mining Company, dividend of 25 cents per share, $100,000, payable August 10th at the office of the company, Room 128, Laclede Building, St. Louis, Mo. Transfer books close August 1st and reopen August 11th.

Mollie Gibson Consolidated Mining and Milling Company, dividend, No. 9, of five cents per share, $50,000, payable August 10th at the office of the company in Colorado Springs, Colo. Transfer books close August 5th and re-open August 11th.

Sloss Iron and Steel Company; coupons due August 1st on the first mortgage bonds of this company will be paid August 1st by the Central Trust Company, of New York.

## ASSESSMENTS.

| COMPANY. | No. | When levied. | D'l'nq't in office. | Day of sale. | Am't. per share. |
|---|---|---|---|---|---|
| Alliance, Utah | 14 | June 19 | July 21 | Aug. 10 | .10 |
| Best & Belcher, Nev | 49 | June 23 | July 28 | Aug. 18 | .50 |
| Bullion, Nevada | 33 | July 16 | Aug. 20 | Sept. 8 | .50 |
| Clara, S. Dak | 4 | June 2 | July 20 | Aug. 15 | .25 |
| Challar, Nev | 30 | July 14 | Aug. 18 | Sept. 8 | .50 |
| Crown Point, Nev | 5? | July 9 | Aug. 13 | Sept. 3 | .50 |
| Exchequer, Nev | 31 | July 23 | Aug. 27 | Sept. 17 | .25 |
| Garden City, S. Dak | .... | July 14 | Aug. 14 | Sept. 2 | .001 |
| Golden Fleece Gravel, Cal | 15 | June 30 | Aug. 12 | Sept. 19 | 5.00 |
| Goodman, Nevada | 10 | June 2 | July 4 | Aug. 6 | .05 |
| Gould & Curry, Nev | 67 | July 22 | Aug. 25 | Sept 17 | .30 |
| Hartrey Con, Cal | 8 | July 7 | Aug. 11 | Aug. 29 | .05 |
| Honorine, Mich | ... | June 26 | Aug. 1 | Aug. 31 | .05 |
| Iron Hill, S. Dak | 20 | June 27 | Aug. 3 | Aug. 25 | .03 |
| Justice, Nev | 48 | July 11 | Aug. 15 | Sept. 4 | .25 |
| Northwestern G. & S., B. C. | 3 | June 18 | July 31 | Aug. 24 | .08 |
| Pocahontas, S. Dak | 7 | July 15 | Aug. 18 | Sept. 7 | .001 |
| Potosi, Nevada | 36 | July 21 | Aug. 25 | Sept. 15 | .50 |
| Saratoga, Nev | 1 | June 20 | July 24 | Aug. 12 | .02 |
| Savage, Nevada | 76 | July 16 | Aug. 8 | Sept. 7 | .50 |
| Seg. B. & Midas, Nev | 8 | June 16 | July 20 | Aug. 10 | .50 |
| Troy, S. Dak | 6 | June 30 | Aug. 3 | Aug. 22 | .00¼ |
| U. S. Grant, S. Dak | 3 | June 2? | July 30 | Aug. 15 | .001 |
| Wood River, Idaho | 2 | June 1? | July 13 | Aug. 10 | .00½ |

## PIPE LINE CERTIFICATES.

(Specially reported by Messrs. WATSON & GIBSON.)

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

| | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| July 25 | 67⅞ | 67⅞ | 67¼ | 67¼ | 8,000 |
| 27 | 67 | 67 | 64 | 64 | 6,000 |
| 28 | 64 | 64 | 62¾ | 62⅞ | 25,000 |
| 29 | 62⅝ | 62⅝ | 59⅝ | 60 | 87,000 |
| 30 | 62⅝ | 63 | 62½ | 63 | 22,000 |
| 31 | 60 | 60 | 60 | 60 | 65,000 |
| Total sales in barrels | | | | | 213,000 |

NEW YORK STOCK EXCHANGE.

| | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| July 25 | .... | .... | .... | .... | ..... |
| 27 | .... | .... | .... | .... | ..... |
| 28 | .... | .... | .... | .... | ..... |
| 29 | .... | .... | .... | .... | ..... |
| 30 | .... | .... | .... | .... | ..... |
| 31 | .... | .... | .... | .... | ..... |
| Total sales in barrels | | | | | ..... |

## COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 31.

STATEMENT of shipments of anthracite coal (approximated) for the week ending July 25th, 1891, compared with corresponding period last year.

| Regions. | July 25, 1891. | July 26, 1890. | Difference. | |
|---|---|---|---|---|
| Wyoming Region. Tons | 439,308 | 401,111 | Inc. | 38,197 |
| Lehigh Region " | 173,152 | 128,251 | Dec. | 5,099 |
| Schuylkill Region " | 272,649 | 240,941 | Inc. | 31,708 |
| Total.....Tons | 835,109 | 770,303 | Inc. | 64,806 |
| Total for year to date Tons | 20,933,135 | 18,167,735 | Inc. | 2,765,400 |

PRODUCTION OF BITUMINOUS COAL for week ending July 25th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

| | 1891. Week. | 1891. Year. | 1890. Year. |
|---|---|---|---|
| Phila. & Erie R.R. | 50,181 | 108,104 | 75,135 |
| Cumberland, Md. | 75,399 | 2,347,268 | 2,069,492 |
| Barclay, Pa. | 3,819 | 104,333 | 83,967 |
| Broad Top, Pa. | 9,281 | 279,382 | 291,854 |
| Clearfield, Pa. | 646,431 | 2,859,877 | 2,179,354 |
| Allegheny, Pa. | 24,129 | 727,811 | 750,859 |
| Beach Creek, Pa. | 46,236 | 1,316,777 | 1,051,195 |
| Pocahontas Flat Top | 35,210 | 1,384,157 | 1,078,359 |
| Kanawha, W. Va. | 37,620 | 1,305,134 | 1,159,529 |
| Total | 928,306 | 10,432,843 | 8,739,724 |
| WESTERN SHIPMENTS. | | | |
| Pittsburg, Pa. | 204,312 | 770,187 | 492,105 |
| Westmoreland, Pa. | 243,371 | 1,212,658 | 757,349 |
| Monongahela, Pa. | 15,559 | 333,183 | 261,793 |
| Total | 463,242 | 2,316,028 | 1,511,247 |
| Grand total | 1,391,508 | 12,748,871 | 10,250,971 |

PRODUCTION OF COKE on line of Pennsylvania R. R., for the week ending July 25th, 1891, and year from January 1st, in tons of 2,000 lbs.: Week, 107,396 tons; year, 2,042,744 tons; to corresponding date in 1890, 3,051,936 tons.

### Anthracite.

The production for the week ending July 25th was 835,109 tons, an increase of 64,806 tons over the corresponding period of 1890, and a decrease of 54,489 tons over the week preceding. For the three weeks of this month for which the returns are in, the production amounts to 2,561,201 tons—dangerously near the total output agreed upon.

The sales agents held a meeting on Wednesday and recommended that the output for August be restricted to 3,000,000 tons, including the output of the Pennsylvania Railroad and the Ontario & Western Railroad—assuming that the output of these two will not exceed 500,000 tons—July prices to hold good through August. On the following day the presidents held another meeting, for the first time in years. The meeting is reported as having been exceedingly harmonious. The presidents ratified the recommendation made by the sales agents, and moreover gave strict orders that under no circumstances should coal be sold at a penny under July prices.

The trade in general regards the meeting of the presidents as a fortunate event. There are now reasonable grounds for the belief that the agreement will be adhered to, in which case the 1st of September should see an improved condition in this market.

Trade continues dull, nothing of an enlivening nature having occurred.

The taking of testimony by deposition in the cases of J. C. Haddock and Haddock, Shank & Co. *vs* Delaware, Lackawanna & Western Railroad Company has been postponed until the 14th inst.

### Bituminous.

The trade in bituminous coal has been dull during the past week, as the result of the cargo shipments made on contracts during the past season; these deliveries are now exerting their legitimate effect. At Norfolk, Newport News, Baltimore and Philadelphia, vessels are in good supply, orders scarce and freight rates the lowest ever known, 60c. being quoted from Philadelphia to Boston, This can scarcely leave any margin of profit to vessels.

Over-production has been curtailed to a large degree, considering the growing use of this fuel, and the companies maintain prices with unusual harmony. A general disposition to stand by the agreements of the Seaboard Association is manifested.

New York harbor trade is dull, with very little, if any, new business doing.

NOTES OF THE WEEK.

The Norfolk & Western Railroad Company has contracted with the White Star line to supply its trans-Atlantic steamers with Pocahontas coal for one year. About 120,000 tons will be required and delivered at New York. The same company has contracted to supply from 75,000 to 80,000 tons to the Allan line and State line steamers at Halifax, Quebec and New York. Both contracts were secured at full pool prices.

President A. A. McLeod, of the Philadelphia & Reading Coal and Iron Company, has issued a circular to the holders of the outstanding divisional coal land bonds, secured by mortgages upon the following named tracts, and maturing January 1st, 1892: Catharine Groh tract (Richardson), Saint Clair tract, Eagle Hill tract (Beatty), Eagle Hill, Ravensdale, Dilcamp, etc., tracts (Baber), Eagle Hill, West Flowery Field tracts (Mattson), Lee lands, etc. (Wetherill), Brady, Gray and Wetherill tracts, Locust Mountain Summit Improvement Company's lands, Tamaqua Company's lands (Roberts), that the payment of the principal of the bonds named will be extended from January 1st, 1892, to January 1st, 1897, and that interest will be paid on the bonds extended on and after the date of extension at the rate of 6% per annum. The bonds extended will retain the benefit of the original mortgages securing them, as well as the guarantee indorsed thereon by the Philadelphia & Reading Railroad. New coupon sheets will be attached to the coupon bonds, and, with the registered bonds, will be properly stamped if presented at the office of the company prior to November 1st, 1891.

### Buffalo. July 30.

(From our Special Correspondent.)

Business in anthracite and bituminous coal is dull. There is no change in prices. It is reported that the conclusion has been arrived at, after a thorough discussion of the situation of affairs by the representatives of the various companies, that no advance or decline will be made in quotations of anthracite during the month of August.

One of the canal breaks, that near Montezuma, has been repaired; the other, near Schenectady, is so bad that navigation will not be resumed before August 7th at earliest.

The bids for the Poor Department coal were opened last week. Anthracite, stove size, $3.85, and chestnut, $4.05, per net ton, delivered to houses, was the lowest; two other bids were at $3.98 for stove and $4.09 for chestnut. The department uses about 2,000 tons yearly.

The Buffalo *Express* published the following paragraph: "Buffalo seems to be the Mecca to which the various coal roads have been heading within recent years. Those which do not now own terminals are anxious to get into the city on their own lines if possible. The latest report is that the Beach Creek Road, which has recently secured some of the heavy coal contracts, is anxious to get into Buffalo through a connection at its west end. For this purpose, it is stated, control is now sought to be obtained of the Buffalo, Rochester & Pittsburg Railroad and the mining corporation, the Rochester & Pittsburg Coal and Iron Company, which is an attachment of the railroad company. The proposed purchase will give to the line direct connection with Buffalo and the lake markets." And also this statement: "Another movement which, it is believed, will eventually be made is that of the Reading, which, it is stated, proposes to get into Buffalo by building a connection with the Western New York & Pennsylvania, after control of that company can be obtained. At present the Reading is obliged to ship its coal far to the east and then bring it west over other lines, entailing a heavy loss on account of the arbitraries to which the other roads are entitled. This amount will of course be saved by securing control of a line to Buffalo. The heavy investments made by the Reading not only in Buffalo but along the lakes makes the story exceedingly probable."

The "Michigan," which left this port a few days since laden with coal, arrived at Chicago in due course, and during the process of unloading broke in two. The report states "that the coal unloaders had been working on her all day and had her well emptied out amidships, but had left the coal in her ends, although the captain had protested against this method of unloading, saying it would break his boat in two. The "Michigan" has three steel arches on either side. The middle one is broken on one side and pulled down on the other. The planking on her sides is pulled apart, and on the decks it is either pulled apart or broken in two. Repairs will cost several thousand dollars.

The coal movement has been very light for several days up to Tuesday. Yesterday and this forenoon there was a good inquiry for Chicago. Freights were firm and vessel men would not make any concession, although a large fleet of vessels has been in port for several days. The rates hence were as follows during the past week: 50c. to Chicago, Milwaukee, Racine and Sault Ste. Marie; 30c. to Duluth and Superior; 40c. to Saginaw, Green Bay; 45c. to Escanaba; 55c. to Fort William, and 25c. to Bay City and Detroit. The quantity of coal shipped hence by lake from July 23d to 29th, both days inclusive, was only 42,340 net tons, distributed about as follows: 25,545 to Chicago; 4,300 to Milwaukee; 7,015 to Duluth; 680 to Detroit; 780 to Bay City; 1,950 to Saginaw; 570 to Gladstone; 600 to Escanaba, and 600 to Sault Ste. Marie.

### Boston. July 30.

(From our Special Correspondent.)

The end of July finds the anthracite market in practically the same condition of affairs as was noted at the first of the month. Prices are higher and agents are certainly in better shape to meet the August demand which is anticipated to be very large. Notwithstanding the fact that there has been very little business done in the past month values were easily held, and agents say that when the demand commences the trade will realize that there is not any great surplus of coal. Buyers, however, are of a different opinion and claim that it is an easy matter to go into the market and buy at June prices.

There is nothing of importance new to report in the bituminous market. There is no call for coal and everybody seems well supplied. Stock is coming forward freely and its abundance is having a demoralzing effect upon prices, which are easier. The price on cars still holds at $3.40.

Freights are ruling dull and have a weakening tendency. There is plenty of tonnage offering for which there is no business. From New York 60c. is quoted; from Philadelphia 70@80c., and from Baltimore 75@90c.

The retail situation has not altered during the week. Dealers are well supplied and are waiting for the demand to start up. Prices are steady and unchanged.

The receipts of coal at this port for the week ending July 25th were 32,031 tons of anthracite and 16,042 tons of bituminous, against 57,608 tons of anthracite and 31,395 tons of bituminous for the corresponding week last year. The total receipts thus far this year have been 1,028,006 tons of anthracite and 707,120 tons of bituminous, against 916,593 tons of anthracite and 571,539 tons of bituminous for the same time last year.

### Chicago. July 29.

From our Special Correspondent.)

There is little change to be noted in the condition of the local market from that of a week ago. Anthracite is hard to move and trade dull and featureless, with scarcely a redeeming point in the situation. There is some inquiry from country dealers, but as yet there is little business resulting. A number of sales are reported at $4.90 for large egg and chestnut and $5 for small egg and range f. o. b. cars here. Many outside dealers are endeavoring to get their order in at old rates, and most of them are placed at $5@$5.25. The retail trade is in very bad shape, and sales to small consumers are made as low as $5.40@$5.65 delivered in cellar, though the more general price is $5.75

all over the city, and some small dealers are possibly getting $6.

Lake freight from Cleveland to Escanaba is 40c per net ton, and large shipments of Pittsbuag and other soft coals are going forward and into stock for the railroad at that point. Shippers in Indiana are loud in their complaints of poor car service, and they are hampered with orders they cannot fill on account of shortage of cars. Demand is quite good for bituminous coal, railroads and other large consumers stocking up considerably.

Several of the heaviest consumers of Connellsville coke in this vicinity are now putting in large stocks, but generally the demand is light and the surplus heavy at this point.

Prices of anthracite per ton of 2,000 pounds f. o. b. Chicago are: Lehigh lump, $6.75; large egg, $5; small egg, range, and chestnut, $5. Retail prices per ton are: Large egg, $6; small egg, range, and chestnut, $6.

Prices of bituminous per ton of 2,000 pounds f. o. b. Chicago are: Pittsburg, $3.25; Hocking Valley, $3; Youghiogheny, $3.40; Indiana block, $2.35@$2.50; Illinois block, $1.90@$2.

**Coke.**—Connellsville, 72-hour, per ton f. o. b. Chicago, $5.05; crushed, $4.75; Walston, $5; New River, $5; West Virginia, $4.50.

**Pittsburg.** July 30.

(From our Special Correspondent.)

**Coal.**—The firmness we have previously noted continues, with an active demand for local and manufacturing purposes. It seems extremely doubtful whether any of the mills and glass factories will be willing to pay an advance for gas when the cold weather sets in. It is certain that thousands of persons now using gas will return to coal before they will stand a further increase.

During the past six years the only coal shipments by water in July have been in 1888, 1889 and 1891. Shipments during the month reach 7,834,000 bushels. Compared with last year we are only 8,676,000 bushels behind. On June 1st the deficiency was 37,550,000 bushels. There is scarcely any mining going on along the Monongahela; for some unaccountable reason the miners are indifferent about working. The number employed in the four mines only amounts to about 1,400, while at least 9,000 could find steady employment as long as there were empties to load.

**Connellsville Coke.**—Trade during the past week showed a moderate degree of activity. There is at present 78% of the ovens in blast and 1,100 cars leaving the region daily. This shows that trade is not in a bad condition. There is evidently a hope among operators for an improved demand in the near future.

The liberal orders of the Carnegie companies at Pittsburg and the Illinois Steel Company at Chicago have helped matters very materially. They find it an excellent plan to keep a good stock on hand. There are 13,228 ovens active, and 3,080 idle; during the week 136 ovens went out of blast. Shipments amounted to 6,624 cars, consigned as follows: To Pittsburg and river points, 2,230 cars; to points west of Pittsburg, 3,383 cars; points east of Connellsville, 1,011 cars; total, 6,624—only 100 cars less than in the previous week. Prices continue firm. Furnace coke, $1.90; foundry coke, $2.30; crushed, $2.65, f. o. b. at works. Freights are the same as quoted for some time past.

## FREIGHTS.

**From Philadelphia to:** Boston, 65@70c.; Charleston, 70c.; Gardiner, *75c.; Milton, *80c.; New York, †90c.; Norfolk, 60c.; Portland, 65@70c; Providence, 60@70c.; Quincy Point, *80c.; Richmond, 70c.; Salem, 65@85c.; Washington, †85c.

* And discharging. † Alongside.

## METAL MARKET.

**Prices of Silver Per Ounce Troy.**

NEW YORK, Friday Evening, July 31, 1891.

| July | Sterling Exch'ge | Lond'n Pence. | N. Y. Cts. | July | Sterling Exch'ge. | Lond'n Pence. | N. Y. Cts. |
|---|---|---|---|---|---|---|---|
| 25 | 4.86 | 45 1/16 | 99⅞ | 29 | 4.86 | 45 1/16 | 100¼ |
| 27 | 4.86 | 45 1/16 | 100 | 30 | 4.86 | 46 1/16 | 100⅛ |
| 28 | 4.86 | 45 1/16 | 100⅛ | 31 | 4.86 | 46 | 100 |

Market has been quiet and quotations have been within a narrow range.

**Domestic and Foreign Coin.**

The following are the latest market quotations for American and other coin:

| | Bid. | Asked. |
|---|---|---|
| Trade dollars | $ .78 | $ .79 |
| Mexican dollars | .78 | .79 |
| Peruvian soles and Chilian pesos | .75 | .77 |
| English silver | 4.86 | 4.90 |
| Five francs | .94 | .95 |
| Victoria sovereigns | 4.87 | 4.90 |
| Twenty francs | 3.88 | 3.92 |
| Twenty marks | 4.74 | 4.78 |
| Spanish doubloons | 15.55 | 15.70 |
| Spanish 25 pesetas | 4.78 | 4.83 |
| Mexican doubloons | 15.55 | 15.70 |
| Mexican 20 pesos | 19.50 | 19.90 |
| Ten guilders | 3.96 | 4.00 |
| Bar silver | 1.00¼ | 1.01 |

**Silver Bullion Certificates.**

| | Price. H. | Price. L. | Sales. |
|---|---|---|---|
| July 25 | 100⅝ | 100⅛ | 40,000 |
| July 27 | 100¼ | 100⅛ | 85,000 |
| July 28 | 100¾ | 100¼ | 195,000 |
| July 29 | 100¾ | 100⅛ | 80,000 |
| July 30 | 100¼ | 100 | 15,000 |
| July 31 | 100⅜ | 100⅛ | 111,000 |
| Total sales | | | 526,000 |

**Foreign Bank Statements.**

The governors of the Bank of England at their weekly meeting on Thursday made no change in its minimum rate of discount, which remains at 2½%. In the week the bank gained £242,000 bullion, and the proportion of reserve to liabilities was raised from 42·01% to 43·47%, against a decline from 38·90% to 38·57% in the corresponding week last year, when its discount rate was advanced from 4% to 5%. On the 30th ult. the bank gained £20,000 bullion. The weekly statement of the Bank of France showed a decrease of 1,000,000 francs in gold and an increase of 1,100,000 francs in silver.

The metal markets have all been more or less affected by the uneasy state of the money market. The rumor mongers have been very active, spreading all sorts of news, most of which is without foundation, but anyhow creating a very bad impression. Money on call is easy but on time almost unobtainable, even against first-rate collaterals, and this state of affairs cannot be without influence on metals.

**Copper.**—The lower values established in London have reacted here somewhat; business has been of quite a retail character, and again done at somewhat lower figures. We understand that consumers are very poorly stocked with raw material, and producers do not hold the heavy amounts which they did, having been greatly relieved by the large shipments made during the last few months to Europe. All these facts ought to speak in favor of this article, but as long as the money market does not show a brighter aspect there is hardly any chance of improvement. Lake copper has been dealt in at from 12½c. to 12⅝c., and for larger blocks a small concession is obtainable. Casting is held very firmly at about 12¼c.@12¼c., and for jobbing lots higher prices are obtainable. There is no pressure to sell, or else these prices could not have been maintained. Arizona copper is not offered at all.

The London market has been rather weak and disturbed. The lowest point reached was £51 15s. on Wednesday the 29th, but after that a slight reaction set in, and prices came up about 10s., but close to-day at £52 for spot and £52 10s. for three months. Prices for fine copper are said to be rather depressed, and the margin between common and fine sorts is unusually small. We quote: English tough, £53 10s.@£54; best selected, £56 10s.@£57; strong sheets, £59@£59 10s.; India sheets, £63@£63 10s.; yellow metal sheets, 5¼d.

A cable just in advises that statistics have increased 900 tons.

The exports of copper from the port of New York during the past week were as follows:

| | | | |
|---|---|---|---|
| To Liverpool— | Copper Matte. | Lbs. | |
| S. S. Germanic | 3,218 bags. | 330,575 | $25,000 |
| " Alaska | 1,797 " | 197,670 | 14 000 |
| " Trinacria | 6,516 " | 627,543 | 43.000 |
| " " | 25,947 ingots. | 519.080 | 25,947 |
| | Copper. | | |
| S. S. Germanic | 1,220 pigs | 336,443 | $40.000 |
| " Trinacria | 540 bbls. | 675.000 | 85,000 |
| " " | 785 pigs. | 214,230 | 23,500 |
| To Havre— | Copper. | | |
| S. S. Burgogne | 270 casks. | 337,000 | $44.250 |
| " " | 348 pigs. | 111,116 | 14,000 |
| To Rotterdam— | Copper. | | |
| S. S. Maasdam | 9 casks. | 11,200 | $1 275 |
| To Hull— | Copper. | | |
| S. S. Buffalo | 10 cakes. | 8.960 | $1,200 |

**Tin.**—The volume of business in this article has not been large, but prices are pretty firm for near delivery, stocks being very small, and the article appears to be in a sound position. Little business was done for future delivery, but for parcels afloat by steamers due to arrive during the next fortnight high prices have been bid. We quote spot, 20·30c.; August, 20·30c.; September, 20·30c.

In London quite a fair business has been doing. It appears that over there a state of affairs exists similar to that here, and spot stocks are obtainable only at a premium over futures. Consumption is reported to be increasing, the Welsh tinplate makers having partly resumed operations. Prices have been very steady, opening at £91 5s., reacting to £90 15s., and closing at £91 for spot and £91 12s. 6d. for futures.

**Lead** has been rather irregular; some sales have been made at 4·40c. and others at 4·35c., but buyers and sellers remain mostly in a waiting attitude. Offers from the West continue to be very light.

The decision of the government to allow foreign ores to come in with duty calculated at a valuation of 1¼c. below the official price as quoted in New York is considered as being of little value now, as the large smelting works erected in different parts of Mexico will be able to pay better prices for the ores than the American smelters; consequently little lead is expected to be imported under this ruling. We quote for spot delivery, 4·40c.; August, 4·40c.; September, 4·45c.

*St. Louis Lead Market.*—The John Wahl Commission Company telegraphs us as follows: "Lead is quiet. There is a moderate demand for spot, at from 4·22½c. to 4·25c. August is selling lightly at 4·20c., and September at 4·25c."

*Chicago Lead Market.*—Messrs. Everett & Post telegraph us as follows: "The market is quiet and dull. Sales during the week aggregate 400 tons. Closing prices are: Desilverized, 4·25c. and 4·30c. asked for August delivery, with 4·25c. bid."

**Spelter** continues very irregular and hardly any business is doing. There is pressure to sell from second hands, and, as the demand is light, consumers have little difficulty in covering their wants. We have to quote 5@5·05c. New York.

**Antimony.**—In this metal quite a fair business has been doing at the lower prices now established, and we quote Cookson's, 12¾c.; Hallett's, 11¼c.; L. X., 12c.

**Nickel** continues to be much inquired for, but in the absence of available stocks it is difficult to name exact prices. We must quote nominally 70@72½c.

## IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 31.

So far as the general condition of the iron market is concerned, our last week's report would be perfectly timely and pertinent at this writing. The reports from the different centers show that the same situation prevails throughout the whole country.

**American Pig Iron.**—There has been a trifle more inquiry, but this has not resulted in sales of any consequence. Prices are steady; this fact, in itself, considering the present large production which must find an outlet, is rather encouraging. The Northern brands, notably No. 1x foundry irons, are rather scarce, and there are no alarming accumulations of any brands. Prices ruling are as follows: Northern, No. ix, $17@$18; No. 2 x, $16@$17. Southern, No. 1 1x, $17@$18; No. 2 x, $16@$17.

**Scotch Pig Iron.**—There has been a slightly bigger demand than usual for Scotch irons, probably for mixing with low-grade Southern irons, which are generally too hard for casting. Quotations are: Eglinton, $20.50; Summerlee, $22.50; Coltness, $22.75@$23. A lot of 100 tons arrived during the week.

**Spiegeleisen and Ferro-manganese.**—No sales of any magnitude are reported either in ferro or in spiegel. The market for both is dull. We quote this week: Spiegeleisen, 20%, $28@$29; ferro-manganese, 80%, $64½@$65.

**Steel Rails.**—No new business in this market can be reported. The old statement that the railroads in need of rails are unable to have their paper accepted is once more going the rounds.

The strike at the Pennsylvania Steel Company's Works at Steelton is at an end, and resulted in victory for the company. The announcement is made that the Lackawanna Company has notified the men at its mills in Scranton, Pa., that it has decided to go upon half time, commencing this week, owing to the depression in the market. About 3,000 men are employed.

Prices are beingstrictly adhered to. We quote: $30 at mill, and $30.75 at tidewater.

**Rail Fastenings.**—There is absolutely nothing doing in the market, which is as dull as it can be. There is no change in the quotations, which are as follows: Spikes, $2.10@$2.15; angle plates, 1·70@1·80c.; bolts and square nuts, 2·75@2·85c.; hexagonal nuts, 2·95c.; complete joint, iron and steel, acording to weight.

**Tubes and Pipe.**—The usual amount of business is going on. Ruling discounts on carload lots are as follows: 47½% on butt, black; 40% on galvanized: 60% on lap, black; 47½% on lap, galvanized; boiler tubes, 50% on all sizes; casing, all sizes, 50%.

**Structural Material.**—Manufacturers report a very good business as to volume, but the prices are not as high as they should like to see them. This means that the buyer has the advantage. Quotations this week are: Universal plates, $2.20; bridge plates, $2.10; beams, $3.10.

**Merchant Steel.**—There is a very fair demand for the various kinds of merchant steel. Consumers, nowadays, buy in smaller quantities than was their custom in years gone by, and it is not as easy for manufacturers to sell as large individual lots, but the aggregate business is good. Quotations are as follows: Best English tool, 15c., net; American tool steel, 7@8c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2·50c; open-hearth spring, 2.60c.; tire steel, 2·50c.; toe calks, 2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

**Old Material.**—Nothing is doing in this market. Quotations for old rails are nominally $21@$22. Wrought iron scrap is quoted at $21@$22 at yards.

**Chicago.** July 30.

(From our Special Correspondent.)

The feature of the past week was the further weakening in Lake Superior charcoal iron, some of the smaller furnaces having sold at figures close

to those prevailing two months ago. With one or two exceptions, all grades of Southern iron continue weak and the market is generally dull. Much bitter feeling has resulted from the iron workers' strike, and there are still some 800 men out; as a consequence several large non-union shops are very short-handed. Plans of other big office buildings will have to be altered should the trouble continue much longer. General demand for finished iron is steadily improving, and that for steel is fair. There is a better inquiry for steel rails, splice bars and other track supplies, and the steel mills are running full. Some shortage in cars is noted in the ore regions North for all-rail shipments to furnaces in Indiana and Ohio; a similar condition of things is noticeable South, where the cars are utilized for fruit coming North. Old material and scrap are lifeless.

**Pig Iron.**—Excepting for small quantities for prompt shipments, demand for all grades of pig iron is light. Dealers, though, are a unit in the opinion that trade will be good a little later on. Some of the smaller Lake Superior charcoal furnaces are again showing weakness, and one lot of 500 tons, to a large consumer, sold at a price very close to those ruling two months ago. The larger manufacturers, though, refuse to meet these figures. Local cokes and softeners continue in moder ate demand in lots of from 50 tons to 200 tons, and some larger orders are reported for extended deliveries. There is much disposition on part of agents of Southern furnaces to press this market, but buyers hold off. In some instances consumers of Southern iron in this vicinity are requesting postponement of regular shipments on contracts, for longer or shorter periods, which is sure to cause trouble later on when rolling stock will be largely engaged in moving crops and perishable goods.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $17@$18; Lake Superior coke, No. 1, $15.50@$16; No. 2, $15@$15.50; No. 3, $14@$14.50; Lake Superior Bessemer, $17.25; Lake Superior Scotch, $17@$17.50; American Scotch, $18@$18.50; Southern coke, Foundry No. 1, $16; No. 2, $15.25; No. 3, $14.50; Southern coke, soft, No. 1, $15.50; No. 2, $14.50; Ohio silveries, No. 1, $18; No. 2, $17; Ohio strong softeners, No. 1, $18; No. 2, $17; Tennessee charcoal, No. 1, $17.50; No. 2, $17; Southern Standard Car Wheel, $21@$22.50.

**Structural Iron and Steel.**—Bridge material is in better demand than it has been. Other structural material is in limited request, as many contemplated extensive alterations have been shelved for the present. Quotations for car lots f. o. b. Chicago are as follows: Angles, $2@$2.10; tees, $2.60@$2.70; universal plates, $2.35@$2.45; sheared plates, $2.30@$2.40; beams and channels, $3.20.

**Plates.**—Trade is about holding its own, with a moderate demand from mill and warehouse, but there are no large orders on the market. Steel sheets, 10 to 14, $2.70@$2.80; iron sheets, 10 to 14, $2.60@$2.70; tank iron or steel, $2.50@$2.70; shell iron or steel, $3@$3.25; firebox steel, $4.25@$5.50; flange steel, $3.25@$3.40; boiler rivets, $4.25; boiler tubes, 2¾ in. and smaller, 55%; 3 to 6 in., 65%; 7 in. and upward, 55%.

**Merchant Steel.**—A marked improvement is noted over the past few weeks, both in orders and demand for merchant steels, and buyers seem anxious to cover at present prices. Some fair-sized contracts were placed by implement men. Good steels of best grades are in fair request. Prices remain unchanged: Tool steel, $6.75@$7; tire steel, $2.30@$2.50; toe chalk, $2.50@2.65; Bessemer machinery, $2.20@$2.30; Bessemer bars, $2@$2.10; open-hearth machinery, $2.60@$2.75; open-hearth spring, $2.75@$3; crucible spring, $3.75@$4.

**Steel Rails.**—We hear of several large inquiries for standard sections, which will be closed within the next few days. Demand is reported larger than for several weeks. Some small orders have been placed with Eastern mills for prompt shipment at $30 mill, equal to $33 f. o. b. Chicago. Indications now are that the turning point has been reached, and higher prices for prompt delivery are assured. We quote $31@$33 according to size of order, delivery, etc. Splice bars and other track material are in good demand, and spikes have advanced. Splice bars are quoted: $1.95@$2 for steel and $1.85@$1.95 for iron, and spikes at $2.15@$2.20 per 100 lbs.; track bolts, hexagonal nuts, $2.85@$2.90.

**Galvanized Sheet Iron.**—Business is improving, and mill orders and warehouse trade increasing, with discounts unchanged at 67½% off on Juniata and 67½% and 5% off on charcoal.

**Bar Iron.**—Some large inquiries are in the market for bars; wagon makers are ordering and demand generally is improving. Car builders are also figuring on material and the outlook is brighter. Local mills quote 1·70c. and valley mills 1·55 at mill. Warehouse business is fair to good and dealers quote 1.80@1·90c. from stock.

**Black Sheet Iron.**—Some good orders have been placed by jobbers and dealers during the week at about 2·90c. for No. 27 common, f. o. b. Chicago. Dealers quote 3·10c., same gauge, from stock.

**Nails.**—Steel cut are in quiet demand all around, though local mills and agents of those outside are less inclined to shade prices. Dealers quote $1.75 in small quantities. Wire nails are in better inquiry and prices are becoming firmer. Jobbers quote $2.15 from stock.

**Scrap.**—Demand is light for best wrought grades; all others exceedingly dull. Quotations are: No. 1 railroad, $19.00; No. 1 forge, $18; No. 1 mill, $14; fishplates, $21; axles, $23; horseshoes, $18; pipes and flues, $13; cast borings, $8; wrought turnings, $10.50; axle turnings, $12.50; machinery casting, $11.50; stove plates, $8; mixed steel, $11; coil steel, $13.50; leaf steel, $15.50; tires, $17.50.

**Old Rails and Wheels.**—Offerings of old iron rails are light and holders want $23, offers of $22.75 being refused. Old steel rails are $13.50@$16.50 according to length. Old car wheels have changed hands speculatively between dealers, who ask $15.50. Market very dull.

### Louisville. July 25.

(Special Report by Hall Bros. & Co.)

A dull, quiet market still prevails; there has been even less activity during the week under review than the week previous. The general disposition is a waiting one, and there have been comparatively few sales worthy of mention, mostly ranging in carload lots, with scattering orders for 100 to 500 tons, and it is not improbable that prices have been shaded some. No. 1 foundry is in scant supply, but there is an abundance of most all the other grades, which are offered for both early and future shipment at figures which under ordinary state of affairs would be very attractive and readily taken. The money market still continues close, though the banks readily meet the merchants' business wants at current rates. We quote:

**Hot Blast Foundry Irons.**—Southern coke No. 1, $14.25@$14.50; No. 2, $13.50@$14; No. 3' $13@$13.25. Southern charcoal, No. 1, $16@$17; No. 2, $15.50@$16. Missouri charcoal, No. 1, $17@$17.50; No. 2, $16.50@$17.

**Forge Irons.**—Neutral coke, $12.50@$12.75; cold short, $12.25@$12.50; mottled, $11.75@$12.

**Car Wheel and Malleable Irons.**—Southern, standard brands, $19@$19.50; Southern, other brands, $17@$18. Lake Superior, $20@$21.

### Philadelphia. July 30.

(From our Special Correspondent.)

**Pig Iron.**—Things look a trifle more encouraging in the pig iron market than for some weeks past; by this, however, we do not mean that there is any great activity, only that the market is fairly active. There has been a general resumption in nearly all the mills, and prices are held firm on most brands. Quite a number of small sales have been made, and buyers seem ready to place only orders for immediate use. At the present prices one would think orders for future delivery would come in, but there are no such orders being placed. Pennsylvania No. 1 is selling at from $17.75 to $18; No. 2, $16.50 to $17. Gray forge is commanding $15. There is very little Southern iron selling.

**Foreign Material.**—There is some call for ferro-manganese at $64, but importers are not willing to sell at that price, consequently very little or none is selling.

**Steel Billets.**—Some sales have been made at $27.75 for billets; consumers are not looking ahead, however, only ordering as they need. Nominal quotations are $28 to $28.50.

**Muck Bars.**—There is a tendency this week to lower prices in the muck bar market; things are in a quiet condition; $27.25 is the regular asking price, but some few lots have been taken at a little less than this figure—some as low as $26.50. Holders are anxious for sales.

**Sheet Iron.**—There is a slight improvement noticeable in the sheet iron market this week; there is not a very heavy demand, by any means, for this season of the year, but mills are all in working order. Prices remain as last quoted, namely, 3@3·50c. for best refined, and 4c. for best soft steel.

**Skelp Iron.**—Quotations on grooved skelp 1·70@1·75c., according to point of delivery and amount wanted. No sales of importance to report.

**Bar Iron.**—There is small demand for bar iron, but prices remain firm. Some few car builders have been in the market for small lots, and it is expected that before many weeks large orders will be placed from this quarter. Quotations, 1·65@1·80c., from interior and city mills.

**Plate and Tank Iron.**—A few small lots have been taken within the past week at old prices. Concessions are to be obtained at this time, as makers are anxious to secure orders ahead. Quite a number of ship builders have been looking around, and in some instances have placed contracts. Tank plates are quoted at 2@2·10c.; refined, 2·20@2·30c.; firebox, 4@4·25c.

**Wrought Iron Pipe.**—Prices are not held very steady in this line; some few orders have been taken and there is very little change from last week. Butt welded black discounts 55%, boiler tubes 60c.

**Structural Material.**—There is very little new business coming in at this time. Mills are busy on old orders. The output has been restricted somewhat. Prices are about the same as quoted last week, namely, 2·05@2·10c. for angles; sheared plates, 2@2·10c.; tees, 2·50@2·60c.; beams and channels, 3·10c.

**Steel Rails.**—There are a few calls for small lots of steel rails and at the same price, $30.50@$31.00; no large lots are selling; price still held firm at $30.

**Old Rails.**—Quotations, $21@$21.50; old steel are held at $17.50@$18.

**Scrap.**—Buyers have been looking around for a few small lots, and No. 1 railroad scrap brings $20.50@$21. There is not much doing, however. Best machinery, $14@$15; old car wheels, $16@$17.

### Pittsburg. July 30.

(From our Special Correspondent.)

**Raw Iron and Steel.**—The summer dullness has fairly set in, and during the next three weeks the prospects are that sales will be restricted to limited amounts. Prices for most descriptions are weaker, but not quotably lower, with few exceptions. It must be borne in mind that the July sales of raw iron beat all previous records. Many thousand tons have been sold for delivery during the next three months; this places both parties in a safe condition; and quite a number of dealers have left business to take care of itself and departed for various points.

Unless all signs fail, the coming fall and winter trade will be one that will place all previous records in the background. An iron firm of this city has leased Hall & Co.'s furnace at Sharon, Pa., and will make Bessemer iron. The new firm has also purchased about 100,000 tons of Bessemer ores. Since our last report both Bessemer and non Bessemer ores have advanced 25 cents per ton, and both kinds are said to be scarce. Hence those parties that made their purchases earlier in the season will have that much advantage over those that have to purchase later. Lake freights have advanced 10 cents per ton within a short time. The impression seems general that a further advance may be looked for in the near future. The furnaces in Shenango and Mahoning valleys are well sold up, having disposed of sufficient to keep them employed during August and September. Under these circumstances they are not in want of new business for early delivery Southern iron continues to be neglected. We have heard of no business for some time.

The financial situation is disquieting, and while there is nothing unfavorable on the surface, there is an unaccountable feeling of uncertainty that until that is removed it will be very hard to get up a large demand for iron, although things may turn as they frequently do when least expected. So far as crops are concerned, everything is as favorable as could be wished, while the demand promises to be almost unprecedented. Railroad earnings are also showing a steady increase, which will undoubtedly increase as the crops begin to move. A leading iron man has this to say: "Considering the large increase in production, in connection with so many mills being closed, the market holds very well. Good city brands are taken at quoted rates without much effort on the part of sellers; and while holders of other descriptions are a little anxious for new business, they are not disposed to force matters." The situation may be summed up as follows: Prices, on the whole, are a shade weaker than last week, and holders, generally, show no inclination to make concessions.

*Coke Smelted Lake and Native Ores.*

| | |
|---|---|
| 1,500 Tons Bessemer, Aug. | $16.00 cash. |
| 1 200 Tons Bessemer, Aug., Sept. | 16.00 cash. |
| 1,000 Tons Grey Forge. | 14.50 cash. |
| 1,000 Tons Bessemer. | 16.15 cash. |
| 1,000 Tons Grey Forge, Aug., Sept. | 14.15 cash. |
| 500 Tons Grey Forge, Sept. | 14.20 cash. |
| 500 Tons Grey Forge, Aug., Sept. | 14.15 cash. |
| 500 Tons Grey Forge, Sept., Oct. | 14.25 cash. |
| 500 Tons No. 1 Foundry | 16.50 cash. |
| 500 Tons Grey Forge | 14 00 cash. |
| 300 Tons Open Mill, all ore | 15.50 4 m. |
| 250 Tons Grey Forge, Aug., Sept. | 14.25 cash. |
| 150 Tons No. 3 Foundry | 14.25 cash. |
| 100 Tons No. 2 Foundry | 15.25 cash. |
| 75 Tons Silvery | 16.00 cash. |
| 50 Tons No. 3 Foundry | 14.50 cash. |
| *Steel Slabs and Billets.* | |
| 2,000 Tons Steel Billets, Sept., Oct. | 25.50 cash. |
| 1,000 Tons Steel Billets. | 25.75 cash. |
| 500 Tons Steel Slabs. | 25.75 cash. |
| 500 Tons Steel Billets. | 25.50 cash. |
| *Muck Bars.* | |
| 1,000 Tons Neutral, Sept. | 27.00 cash. |
| 750 Tons Neutral, Aug. | 27.00 cash. |
| 500 Tons Neutral, Spot | 26.75 cash. |
| *Ferro-Manganese.* | |
| 180 Tons 80%, Domestic | 66.50 cash. |
| *Skelp Iron.* | |
| 500 Tons Sheared Iron | 1.82½ 4 m. |
| 450 Tons Wide Grooved | 1.65 4 m. |
| 250 Tons Narrow Grooved | 1.62½ 4 m. |
| *Steel Wire Rods.* | |
| 400 Tons American fives. | 36.50 cash |
| *Bloom, Beam and Cup Ends.* | |
| 750 Tons Beam and Bloom Ends | $17.50 cash |
| 500 Tons Beam Ends | 18.00 cash. |
| 300 Tons Billet Ends | 17.75 cash. |
| *Old Iron and Steel Rails.* | |
| 500 Tons Sheet Steel Rails | $17.50 cash. |
| 500 Tons Long Steel Rails | 18.25 cash. |
| 500 Tons American Ts | 23.00 cash. |
| *Scrap Material.* | |
| 500 Tons No. 2. W Scrap, extra, net | $17.00 cash. |
| 200 Tons Leaf Steel, gross | 21.00 cash. |
| 50 Tons Iron Axles, extra hammered, net | 27.00 cash. |
| 50 Tons Iron Axles, extra hammered, net. | 27.25 cash. |
| 250 Tons No. 1 R. R. Wrought Scrap, net | 19.50 cash. |
| 300 Tons Cast Iron Borings, gross | 11.25 cash. |
| 300 Tons Cast Scrap, gross | 13.75 cash. |

# NEW YORK MINING STOCKS QUOTATIONS.

## DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | July 25. | | July 27. | | July 28. | | July 29. | | July 30. | | July 31. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| Adams, Colo. | | | | | | | | | | | | | |
| Alice, Mont. | | | | | | | | | | | 1.60 | | 500 |
| Aspen, Nev. | | | | | | | | | | | | | |
| Atlantic, Mich. | | | | | | | | | | | | | |
| Bassick | | | | | | | | | | | | | |
| Belcher | | | | | | | 1 60 | | | | | | 100 |
| Bodie Cons., Cal. | | | | | | | | | | | | | |
| Bos. & Mont., Mont | | | | | | | | | | | | | |
| Breece, Colo. | | | | | | | | | | | | | |
| Bulwer, Cal. | | | | | | | | | | | | | |
| Caledonia, S. Dak. | | | | | | | | | | | | | |
| Catalpa | | | | | .30 | | | | | | | | 500 |
| Chrysolite, Colo. | | | | | | | | | | | | | |
| Colorado Central, Colo. | | | | | | | | | | | | | |
| Commonwealth, Nev. | | | | | | | | | | | | | |
| Comstock T. bonds, Nev. | | | | | | | | | | | | | |
| " scrip., Nev. | | | | | | | | | | | | | |
| Cons. Cal. & Va., Nev. | | | 6.00 | | | | | | 5.75 | | 5.50 | | 300 |
| Crown Point, Nev. | | | | | | | 1.20 | | | | 1.50 | | 300 |
| Deadwood, Dak. | | | | | | | | | | | | | |
| Eureka Cons., Nev. | | | | | 3.00 | | 3 25 | | | | | | 275 |
| Father de Smet, S. Dak. | | | | | | | | | | | | | |
| Franklin, Mich. | | | | | | | | | | | | | |
| Freeland, Colo. | | | | | | | | | | | | | |
| Gould & Curry, Nev. | | | | | | | | | 1.80 | | | | 100 |
| Granite Mountain, Mont. | | | | | | | | | | | | | |
| Hale & Norcross, Nev. | | | | | | | | | | | | | |
| Homestake, Dak. | 11.25 | | | | | | | | | | | | 10 |
| Horn-Silver, Utah. | | | | | | | | | 3.50 | | 3.45 | | 200 |
| Independence, Nev. | | | | | | | | | | | | | |
| Iron Hill, Dak. | | | | | | | .19 | .17 | | | | | 400 |
| Leadville Cons., Colo. | | | | | | | .09 | | | | | | 500 |
| Little Chief, Colo. | | | | | | | | | | | | | |
| Martin White, Nev. | | | | | | | | | | | | | |
| Mono, Cal. | | | | | | | | | | | | | |
| Mt. Diablo, Nev. | | | | | | | | | 2.25 | | | | 50 |
| Navajo, Nev. | | | | | | | | | | | | | |
| N. Belle Isle, Nev. | | | | | | | | | | | | | |
| Ontario, Utah. | | | | | | | | | 39.25 | | | | 50 |
| Ophir, Nev. | 3.40 | | 3.50 | | 3.50 | | | | | | 3.75 | | 400 |
| Osceola, Mich. | | | | | | | | | | | | | |
| Plymouth, Cal. | | | | | | | 2.25 | | | | | | 100 |
| Quicksilver, Pref., Cal. | | | | | | | | | | | | | |
| " Com., Cal. | | | | | | | | | | | | | |
| Quincy, Mich. | | | | | | | | | | | | | |
| Robinson Cons., Colo. | | | | | | | | | .50 | | | | 100 |
| Savage, Nev. | 1.55 | | 1.55 | | | | | | | | 2.25 | | 300 |
| Sierra Nevada, Nev. | | | | | | | | | | | | | |
| Silver Cord, Colo. | | | | | | | | | | | | | |
| Silver King, Ariz. | | | | | | | | | | | | | |
| SilverMg. of L. V., N. M. | | | | | | | | | | | | | |
| Small Hopes, Colo. | | | | | | | .70 | | | | | | 30.0 |
| Standard. | | | | | | | | | | | | | |
| Yellow Jacket, Nev. | 1.75 | | 1.85 | | 1.80 | | | | | | 2.00 | | 450 |

## NON-DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | July 25. | | July 27. | | July 28. | | July 29. | | July 30. | | July 31. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| Alpha, Nev. | | | | | | | | | | | | | |
| Alta. | .70 | .50 | .55 | | .70 | | .60 | | .80 | | .75 | | 750 |
| American Flag, Colo. | | | | | | | | | | | | | |
| Andes, Cal. | | | | | | | | | | | | | |
| Astoria, Cal. | .01 | | .01 | | .01 | | .02 | | .02 | | .01 | | 7,500 |
| Augusta, Ga. | | | | | | | | | | | | | |
| " bonds. | | | | | | | | | | | | | |
| Barcelona, Nev. | | | | | | | | | | | | | |
| Belmont, Cal. | .79 | | .79 | | .79 | .78 | .80 | .79 | .80 | | .80 | | 1,950 |
| Best & Belcher, Nev. | | | 3.10 | | 3.25 | | 3.20 | | 3.20 | | 3.30 | | 600 |
| Bonanza King, Cal. | | | | | | | | | | | | | |
| Brunswick, Cal. | .09 | | | | | | .09 | | .10 | .08 | .09 | | 7,700 |
| Bullion, Nev. | | | | | | | | | | | | | |
| Butte & Bost., Mont. | | | | | | | | | | | | | |
| Castle Creek, Idaho. | | | | | | | | | | | | | |
| Challar. | 2.00 | | 1.85 | | | | | | | | | | |
| Comstock T., Nev. | 16 | | | | | | | | | | 2 25 | | 300 |
| Con. Imperial, Nev. | | | | | | | .16 | | .16 | | .17 | | 3,100 |
| Con. Pacific, Cal. | | | | | | | | | | | | | |
| Crescent, Colo. | .15 | | | | .16 | | | | | | | | |
| Del Monte, Nev. | | | | | | | | | | | | | 1,000 |
| El Cristo, Rep. of Col. | | | | | .50 | | .40 | | | | | | |
| Emmett. | | | | | | | | | .63 | | | | 200 |
| Exchequer, Nev. | | | | | | | | | | | | | 200 |
| Hollywood, Cal. | | | | | | | | | | | | | |
| Huron, Mich. | | | | | | | | | | | | | |
| Justice, Nev. | | | | | | | | | | | | | |
| King & Pembroke, Ont. | | | | | | | | | | | | | |
| Lacrosse, Colo. | | | | | | | | | | | | | |
| Lee Basin, Colo. | | | | | | | | | | | | | |
| Mexican, Nev. | 2 30 | | 2.55 | | 2.75 | | | | | | 2.75 | | 550 |
| Middle Bar, Cal. | | | | | | | | | | | | | |
| Monitor, Colo. | | | | | | | | | | | | | |
| Mutual S. & M. Co., Wash. | | | | | | | | | | | | | |
| Nevada Queen, Nev. | | | | | .27 | | | | | | | | 300 |
| N. Standard, Cal. | | | | | | | | | | | | | |
| N. Commonwealth, Nev. | | | | | | | | | | | | | |
| Occidental, Nev. | | | | | 1.25 | 1.20 | | | | | | | 700 |
| Oriental & Mil., Nev. | | | | | | | | | | | | | |
| Phœnix Lead, Colo. | | | | | | | | | | | | | |
| Phœnix of Ariz. | | | | | | | | | | | | | |
| Potosi, Colo. | 4.00 | | 4.10 | | | | | | | | .35 | | 100 |
| Rappahannock, Va. | | | | | | | | | | | | | 150 |
| S. Sebastian, S. Sal. | | | | | | | | | | | | | |
| Santa Fe, N. M. | | | | | | | | | | | | | |
| Scorpion, Nev. | | | | | | | | | | | | | |
| Seg Belcher, Nev. | | | | | | | | | | | | | |
| Shoshone, Idaho. | | | | | | | | | | | | | |
| Silver Hill, Nev. | | | | | | | | | | | | | |
| Sullivan Con., Dak. | | | | | | | | | | | | | |
| Sutro Tunnel, Nev. | | | | | | | | | | | | | |
| Syndicate. | | | | | | | | | | | | | |
| Tornado Con., Nev. | | | | | | | | | | | | | |
| Union Cons., Nev. | 3.45 | | | | 3.25 | | | | | | | | 200 |
| Utah, Nev. | | | .95 | | 1.10 | | | | | | 1.60 | | 400 |

*Ex dividend. †Dealt in in the New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. ¶Dividend shares sold, 4,935. Non-dividend shares sold, 25,700.
Total New York, 30,635.

# BOSTON MINING STOCK QUOTATIONS.

| NAME OF COMPANY. | July 24. | July 25. | July 27. | July 28. | July 29. | July 30. | SALES. |
|---|---|---|---|---|---|---|---|
| Atlantic, Mich | | | 15.25 15.00 | | | 14.00 | 250 |
| Bodie, Cal. | | | | | | | |
| Bonanza Development. | | | | | | | |
| Bost. & Mont., Mont. | 44.50 | 42.25 42.00 | | 42.00 | | 42.00 41.00 | 1,007 |
| Breece, Colo. | | | | | | | |
| Calumet & Hecla, Mich. | 250 | | 247 240½ | 245 | 245 | 245 | 119 |
| Catalpa, Colo. | | | .25 | | | | 100 |
| Central, Mich. | | | | | | | |
| Cœur d'Alene, Id. | | | | | | | |
| Con. Cal. & Va., Nev. | | | | | | | |
| Dunkin, Colo. | | | | | | | |
| Eureka, Nev. | | | | | | | |
| Franklin, Mich. | | 16.50 | | 16.00 | 16.00 | 15.50 15 25 | 370 |
| Honorine, Utah. | | | | | | | |
| Horn Silver, Utah. | | | | | | | |
| Kearsarge, Mich. | | | 11.50 11.00 | | 11.00 | 11.13 11.00 | 625 |
| Little Chief, Colo. | | | | | | | |
| Little Pittsburg, Colo. | | | | | | | |
| Minnesota Iron. | | | | | | | |
| Napa, Cal. | | | | | | | |
| Ontario, Utah. | | | | | | | |
| Osceola, Mich. | | 36.00 | | | | | 200 |
| Quincy, Mich. | | | 103 | 102 | | 101 100 | 55 |
| Ridge, Mich. | | | | | | | |
| Sierra Nevada, Nev. | | | | | | | |
| Silver King, Ariz. | | | | | | | |
| Stormont, Utah. | | | | | | | |
| Tamarack, Mich. | 150 | | | 150 | 150 | 150 | 68 |
| Tecumseh, Mich. | | | | | | | |

| NAME OF COMPANY. | July 24. | July 25 | July 27. | July 28. | July 29. | July 30. | SALES |
|---|---|---|---|---|---|---|---|
| Allouez, Mich. | 2.25 | | 2.25 2.00 | | 2.13 2.00 | 2.13 2.00 | 1,600 |
| Arnold, Mich. | | | | | | | |
| Aztec, Mich. | | | | | | | |
| Brunswick, Cal. | | | | | | | |
| Butte & Boston, Mont. | 14.63 | | 14.50 | | 14.50 | 14.50 14.00 | 465 |
| Centennial, Mich. | | | 14.50 14.00 | | 14.50 | | 400 |
| Comstock T., Nev. | | | | | | | |
| Copper Falls, Mich. | | | | | | | |
| Crescent, Colo. | | | | | | | |
| Dana, Mich. | | | | | | | |
| Don Enrique, N. M. | | | | | | | |
| El Cristo, S. A. | | | | | | | |
| Hanover, Mich. | | | | | | | |
| Humboldt, Mich. | | | | | | | |
| Hungarian, Mich. | | | | | | | |
| Huron, Mich. | | 1.00 .90 | .85 | | | .75 | 430 |
| Mesnard, Mich. | | | | | | | |
| National, Mich. | | | | | | | |
| Native, Mich. | | | | | | | |
| Oriental & M., Nev. | | | | | | | |
| Phœnix, Ariz. | | | | | | | |
| Pontiac, Mich. | | | | | | | |
| Rappahannock, Va. | | | | | | | |
| Santa Fe, N. Mex. | .45 | .50 | | .50 | .50 | | 2,900 |
| Shoshone, Idaho. | | | | | | | |
| South Side, Mich. | | | | | | | |
| Star, Mich. | | | | | | | |
| Washington, Mich. | | | | | | | |
| Winthrop, Mich. | | | | | | | |

Boston: Dividend shares sold, 2,794. Non-dividend shares sold, 5,795. Total Boston, 8,589.

# COAL STOCKS.

| NAME OF COMPANY. | July 25. | | July 27. | | July 28. | | July 29. | | July 30. | | July 31. | | Sales. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| American Coal. | | | | | | | | | | | | | |
| Cambria Iron. | | | | | | | | | | | | | |
| Cameron Coal & I. Co. | | | | | | | | | | | | | |
| Ches. & O. R. R. | | | | | | | | | | | | | |
| Chic. & Ind. Coal R. R. | | | | | | | | | | | | | |
| Do. pref. | | | | | | | | | | | | | |
| Col. C. & I. | 30½ | 30¼ | 30⅛ | 29⅛ | 30 | 29⅛ | 30 | 28¾ | 28¾ | 27½ | 30 | 27¾ | 3,430 |
| Col. C. & Hocking C. I. | | | | | | | | | | | | | |
| Consolidation Coal. | | | | | | | | | | | | | |
| Del. & H. C. | 127⅝ | | | | 126½ | 126 | 127⅛ | 127¼ | | | 126 | | 518 |
| †D., L. & W. R. R. | 132⅛ | 131⅛ | 131⅝ | 131½ | 132 | 130⅝ | 131⅞ | 130⅝ | 131⅛ | 130⅜ | 132 | 130⅛ | 32,528 |
| Hocking Valley | 24 | | | | 23 | 22⅜ | | | 22½ | | 23 | 22 | 1,400 |
| Hunt & Broad Top. | | | | | | | | | | | | | |
| Do. pref. | | | 44½ | | 44½ | | 44⅜ | | | | | | 102 |
| Illinois C. & Coke Co. | | | | | | | | | | | | | |
| †Lehigh C. & N. | 46¼ | | 46 | | 46¼ | 46 | 46¼ | | 46⅛ | 46 | | | 323 |
| †Lehigh Valley R. R. | 48 | 47⅜ | 47⅛ | | 47⅞ | 47¾ | 47⅝ | 47¾ | 47⅛ | | | | 644 |
| Lehigh & Wilk. Coal. | | | | | | | | | | | | | |
| Mahoning Coal. | | | | | | | | | 70 | | | | 100 |
| Do. pref. | | | | | | | | | | | | | |
| Maryland Coal. | | | | | | | | | | | | | |
| Morris & Essex. | | | | | | | | | | | | | |
| †New Central Coal. | | | | | | | | | | | 101¼ | | 10 |
| N. J. C. R. R. | 109¼ | 107⅝ | 108⅜ | 108 | 108⅜ | 107⅜ | | | 108⅛ | 106⅛ | 108½ | 106½ | 6,029 |
| N. Y. & S. Coal. | | | | | | | | | | | | | |
| N. Y., Susq. & West. | | | 7 | | | | 7 | | 6⅞ | 6⅝ | 7 | 6⅛ | 1,770 |
| Do. pref. | | | 27 | | 26 | | 26 | | 25 | | | | 260 |
| N. Y. & Perry C. & I. | | | | | | | | | | | | | |
| †Norfolk & West. R. R. | | | | | | | | | 13 | | | | 50 |
| †Do. pref. | | | 48⅛ | 47¼ | | | 47 | 46¾ | 46¾ | | 47 | | 705 |
| †Penn. Coal. | | | | | | | | | | | | | |
| †Penn. R. R. | 50¼ | | 50¼ | 50⅛ | 50⅛ | 50 | 50⅛ | 50 | 50 | 49¾ | | | 4,073 |
| Ph. & R. R. R. | | | 28 | | 27¾ | 27⅛ | 27⅝ | | 27½ | 26½ | 26¾ | 26 | 21,126 |
| Sunday Creek Coal. | | | | | | | | | | | | | |
| Do. Pref. | | | | | | | | | | | | | |
| Tennessee C. & I. Co. | 30 | 29⅝ | 29¼ | 28 | 28⅛ | 25 | 28 | 24¾ | 25¾ | 24⅛ | 27 | 25⅛ | 11,425 |
| Do. pref. | | | 83 | | | | | | | | | | 30 |
| Westmoreland Coal. | | | | | | | | | | | | | |

† Par value, $50. Total sales, 84,723.

## Deadwood.

JULY 18.

The following are the closing quotations:

| | | |
|---|---|---|
| Anna | .03½ | |
| Bullion | .02½ | .03 |
| Carthage | .01¼ | .01⅛ |
| Cora | .04 | .05 |
| Double Standard | .12 | .13 |
| Emmett | .01½ | .02 |
| Equitable | .01 | |
| Florence | .03 | .04 |
| Golden Reward | .35 | .36 |
| Harmony | .05 | .03½ |
| Hermit | .02 | .03 |
| Hesta A. | .03 | .03½ |
| Iron Hill | .14 | .18† |
| Isidora | .40 | |
| New Era | .02 | .02½ |
| Maggie | .07 | .10 |
| Mikado | .04 | .05 |
| Mutual | .01 | .01¼ |
| Rainbow | .02½ | .03 |
| Retriever | .19½ | .23 |
| Ross Hannibal | .07 | .09 |
| Ruby Wilkes | .01 | |
| Seab'ry-Calkins | .03 | .03¼ |
| Steward | .07 | .08 |
| Tornado | .12 | .13 |
| Troy | .01 | .01½ |
| Uncle Sam | .09 | .10½ |

†Assessment paid.

## Aspen.

Highest and lowest prices for the week ending July 18:

| | | |
|---|---|---|
| Argentum Juniata | $1.25 | $1.53 |
| Aspen Deep | .10 | |
| Best Friend | .21 | .23 |
| Bushwacker | .31 | .24 |
| Della S. | 4.00 | 4.53 |
| Little Annie | .21 | .23 |
| Mollie Gibson | 4.00 | 4.20 |
| Nolan Creek | | .10 |
| Park, Mamie & Queen. | | |
| Pontiac | .11 | .13 |
| St. Joe & Mineral F'm | .22 | .25 |

## San Francisco Mining Stock Quotations.

| NAMES OF STOCKS. | CLOSING QUOTATIONS. July 24. | July 25. | July 27. | July 28. | July 29. | July 30. |
|---|---|---|---|---|---|---|
| Alpha | | | | | | |
| Alta. | .60 | .60 | .60 | .60 | .70 | .70 |
| Belcher | | | | | | |
| Belle Isle | .60 | .60 | .30 | .65 | .50 | .60 |
| Best & Bel. | 2.75 | 2.80 | 3.10 | 3.10 | 3.05 | 3.15 |
| Bodie | .75 | .75 | .70 | .70 | .60 | .75 |
| Bulwer. | .30 | .30 | .30 | .30 | .30 | .30 |
| Challar. | 1.80 | 1.70 | 1.75 | 1.70 | 2.05 | 2.10 |
| Com wealth. | .40 | .45 | .45 | .45 | .45 | .40 |
| Con. C. & V. | 6.75 | 5.37 | 5.75 | 5.75 | 5.62½ | 5.50 |
| Con Pacific | | | | | | |
| Crown Point. | 1.20 | 1.20 | 1.20 | 1.15 | 1.45 | 1.35 |
| Del M'te, Nev. | | | | | .20 | |
| Eureka C. | 3.00 | 3.00 | 3.00 | | 3.00 | 3.00 |
| Gould & C. | 1.30 | 1.30 | 1.55 | 1.50 | 1.65 | 1.85 |
| Hale & N. | 1.70 | 1.60 | 1.80 | 1.65 | 2.05 | 2.15 |
| M. White | | | | | | |
| Mexican | 2.15 | 2.40 | 2.55 | 2.45 | 2.55 | 2.55 |
| Mono | .40 | .45 | .45 | .45 | | .35 |
| Mt. Diablo | | | | | 2.05 | |
| Navajo | .25 | .25 | | .25 | .25 | .20 |
| Nev. Queen | .20 | .20 | .20 | .20 | .20 | .20 |
| N. Belle Isle | .55 | | .55 | .50 | .60 | .50 |
| N. Com'w'lth | | | | | | |
| Ophir | 3.25 | 3.30 | 3.40 | 3.45 | 3.30 | 3.60 |
| Potosi | 3.75 | 3.90 | 3.85 | 3.95 | 4.50 | 4.95 |
| Savage | 1.40 | 1.35 | 1.50 | 1.50 | 2.20 | 2.15 |
| Sierra Nev. | 2.75 | 3.25 | 3.90 | 3.60 | 3.40 | 3.40 |
| Union Con. | 2.25 | 2.45 | 3.00 | 2.90 | 2.70 | 3.00 |
| Utah | .75 | .90 | 1.05 | .90 | .95 | .95 |
| Yellow Jack. | 1.60 | 1.60 | 1.65 | 1.65 | 1.90 | 1.85 |

## DIVIDEND-PAYING MINES.

| | Name and Location of Company. | | Capital Stock. | Shares. No. | Shares. Par | Assessments. Total levied. | Assessments. Date and Amount of last | Dividends. Total paid. | Dividends. Date & amount of last. | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Adams, S. L. C. | Colo. | $1,500,000 | 150,000 | $10 | * | ..... | $585,000 | June 1891 | .05 |
| 2 | Alice, S. | Mont. | 10,000,000 | 400,000 | 25 | * | ..... | 920,000 | April 1891 | .06½ |
| 3 | Alma & Nelwood., G | Idaho | 300,000 | 30,000 | 10 | * | ..... | 60,000 | Jan.. 1889 | .50 |
| 4 | Amador, G. | Cal. | 1,250,000 | 250,000 | 5 | * | ..... | 31,250 | Aug.. 1890 | .12½ |
| 5 | American Belle, S. G. C | Colo.. | 2,000,000 | 400,000 | 5 | * | ..... | 50,000 | April 1891 | .12½ |
| 6 | Americ'n & Nettie, G. S | Colo.. | ..... | 300,000 | ..... | ..... | ..... | 150,000 | Nov.. 1889 | .10 |
| 7 | Amy & Silversmith, S. | Mont. | ..... | 341,419 | ..... | ..... | ..... | 247,536 | Aug.. 1887 | .12½ |
| 8 | Atlantic, C. | Mich.. | ..... | 40,000 | 25 | $280,000 | April 1875 | 700,000 | Feb.. 1891 | 1.00 |
| 9 | Argenta, S. | Nev.. | 10,000,000 | 100,000 | 100 | 335,000 | July. 1889 | 40,000 | Feb.. 1880 | .20 |
| 10 | Aspen Mg. & S., S. L. | Colo.. | 2,000,000 | 200,000 | 10 | * | ..... | 660,000 | May. 1891 | .10 |
| 11 | Aurora, I. | Mich.. | 2,000,000 | 100,000 | 20 | ..... | ..... | 255,000 | Mar. 1891 | 1.00 |
| 12 | Badger, S. | Ont... | 250,000 | 50,000 | 5 | * | ..... | 37,500 | Mar.. 1890 | .25 |
| 13 | Bangkok Cora-Bell, S. | Colo. | 600,000 | 600,000 | 1 | ..... | ..... | 44,531 | Aug.. 1890 | .00½ |
| 14 | Belle Isle, S. | Nev.. | 10,000,000 | 100,000 | 100 | 190,000 | Dec.. 1889 | 300,000 | Dec.. 1879 | .25 |
| 15 | Belcher, S. G. | Nev.. | 10,400,000 | 104,000 | 100 | 2,978,000 | Feb, 1891 | 15,397,000 | April 1876 | 1.00 |
| 16 | Bellevue, Idaho, S. L. | Idaho | 1,250,000 | 125,000 | 10 | 120,000 | Dec.. 1889 | 200,000 | Jan.. 1890 | .10 |
| 17 | Bi-Metallic, S. G. | Mont. | 5,000,000 | 200,000 | 25 | ..... | ..... | 760,000 | June 1891 | .35 |
| 18 | Bodie Con., G. I. | Cal... | 10,000,000 | 100,000 | 100 | 530,000 | June 1890 | 1,602,572 | April 1883 | .50 |
| 19 | Boston & Mont., G. | Mont. | 2,500,000 | 250,000 | 10 | * | ..... | 520,000 | June 1886 | .15 |
| 20 | Boston & Mont., C. S. | Mont. | 2,500,000 | 100,000 | 25 | * | ..... | 1,953,000 | Aug.. 1891 | 1.00 |
| 21 | Breece, I. | Colo.. | 5,000,000 | 200,000 | 25 | * | ..... | 2,300 | Feb.. 1886 | .01 |
| 22 | Brooklyn Lead, L. S. | Utah | 500,000 | 50,000 | 10 | ..... | ..... | 127,000 | July. 1887 | .05 |
| 23 | Bullion, Beck. & C., S. L | Utah | 1,000,000 | 100,000 | 10 | ..... | ..... | 730,000 | Nov.. 1889 | .50 |
| 24 | Bulwer, G. | Cal... | 10,000,000 | 100,000 | 100 | 130,000 | Aug.. 1889 | 175,000 | Jan.. 1884 | .10 |
| 25 | Bunker Hill & S. S. L. | Idaho | 3,000,000 | 300,000 | 10 | * | ..... | 150,000 | Oct.. 1882 | .06⅔ |
| 26 | Caledonia, G. | Dak.. | 10,000,000 | 100,000 | 100 | 505,000 | May. 1885 | 192,000 | Oct.. 1890 | .08 |
| 27 | Calliope, S. | Colo.. | 1,000,000 | 1,000,000 | ..... | ..... | ..... | 140,000 | Jan. 1891 | .00½ |
| 28 | Calumet & Hecla C. | Mich.. | 2,500,000 | 10,000 | 25 | 1,200,000 | ..... | 35,850,000 | June. 1891 | 5 00 |
| 29 | Catalpa, S. L. I. | Colo.. | 3,000,000 | 300,000 | 10 | * | ..... | 270,000 | May. 1884 | .10 |
| 30 | Centen'l-Eureka, S. L | Utah. | 1,500,000 | 30,000 | 50 | ..... | ..... | 352,500 | July. 1891 | 2.00 |
| 31 | Central, C. | Mich.. | 500,000 | 20,000 | 25 | 100,000 | Oct.. 1861 | 1,970,000 | Feb.. 1891 | 1.00 |
| 32 | Chrysolite, S. L. | Colo.. | 10,000,000 | 200,000 | 50 | * | ..... | 1,650,000 | Dec.. 1884 | .25 |
| 33 | Clay County, G. | Colo.. | 200,000 | 200,000 | 1 | * | ..... | 40,000 | July. 1891 | .02 |
| 34 | Coeur D'Alene, S. L. | Idaho | 5,000,000 | 500,000 | 10 | ..... | ..... | 270,000 | Aug. 1891 | .02 |
| 35 | Colorado Central, S. L. | Colo. | 2,750,000 | 275,000 | 10 | ..... | ..... | 406,250 | Aug.. 1889 | .05 |
| 36 | Commonwealth, S. | Nev | 10,000,000 | 100,000 | 100 | 170,000 | Nov.. 1888 | 20,000 | Nov.. 1890 | .20 |
| 37 | Confidence, S. L. | Nev.. | ..... | 24,96 | ..... | 324,38 | day. 189 | 199,68 | April 1889 | 1.00 |
| 38 | Cons. Cal. & Va., S. G. | Nev.. | 21,600,000 | 216,00 | 100 | 108,00 | Jan.. 1885 | 3,466,80 | April 1890 | .25 |
| 39 | Contention, S. | Ariz. | 12,500,000 | 25,00 | 50 | ..... | ..... | +2,887,50 | Dec.. 1884 | .25 |
| 40 | **Cop. Queen Con., C. | Ariz. | 1,400,000 | 14,00 | 1 | ..... | ..... | 210,00 | Feb.. 1889 | .50 |
| 41 | Cortez, S. | Nev. | 1,500,00 | 300,0 | 0 | * | ..... | 481,00 | Feb.. 1891 | .46 |
| 42 | Crescent, S. L. G. | Utah. | 15,000,00 | 600,00 | 2 | * | ..... | 228,00 | Oct.. 1888 | .03 |
| 43 | Crown Point, G. S. | Nev.. | 10,000,00 | 100,00 | 10. | 2,425,0 | Sept. 188 | 11,588,00 | Jan.. 1875 | 2.00 |
| 44 | Cumberland, L. S. | Mont. | 5,000,00 | 500,00 | 1. | * | ..... | 15,00 | Nov.. 1889 | .03 |
| 45 | Daly, S. L. | Utah. | 3,000,00 | 150,00 | 2 | ..... | ..... | 1,987,50 | June. 1891 | .25 |
| 46 | Deer Creek, S. G. | Idaho | 1,000,00 | 200,00 | . | * | ..... | 2,00 | June 1889 | .05 |
| 47 | Deadwood-Terra, G. | Dak.. | 5,000,00 | 200,00 | 2 | * | ..... | 1,000,00 | Nov.. 1887 | .10 |
| 48 | Derbec B. Grav., G. | Cal.. | 10,000,00 | 100,00 | 10. | 90,00 | Dec.. 188 | 240,00 | Oct.. 1890 | .10 |
| 49 | Dunkin, S. L. | Colo.. | 5,000,00 | 200,00 | 2 | * | ..... | 300,00 | Oct.. 1889 | .05 |
| 50 | Dunstone, G. S. L. | Mont. | 1,000,00 | 200,00 | . | * | ..... | 6,00 | Nov.. 1888 | .03 |
| 51 | Eclipse, L. S. | Colo.. | 10,00 | 100,00 | 1 | ..... | ..... | 20,00 | Nov.. 1887 | .10 |
| 52 | Elkhorn, S. L. | Colo. | 1,00,00 | 20,00 | . | * | ..... | $336,00 | June 1891 | 1.00 |
| 53 | Enterprise, S. | Colo. | 10,00 | 10,00 | 1 | * | ..... | 4,00 | May. 1888 | 1.00 |
| 54 | Eureka Con., S. L. G. | Nev.. | 5,000,00 | 50,00 | 10 | 550,00 | June 1889 | 4,892,50 | Oct.. 1890 | .25 |
| 55 | Evening Star, S. L. | Colo.. | 500,00 | 50,00 | 10 | * | ..... | 1,450,00 | Dec.. 1889 | .25 |
| 56 | Father de Smet, G. | Dak.. | 10,300,00 | 100,00 | 10 | 300,00 | Nov.. 187 | 1,125,00 | Dec.. 1888 | .20 |
| 57 | Franklin, C. | Mich. | 1,00,00 | 40,00 | 2 | 225,00 | June 187 | 1,04,00 | July. 1891 | 2.00 |
| 58 | Freeland, S. G. | Colo. | 5,00,00 | 200,00 | 2 | * | ..... | 180,00 | July. 1886 | .10 |
| 59 | Garfield Lt., G. S. | Nev.. | 500,00 | 150,00 | . | * | ..... | 90,00 | April 1888 | .12½ |
| 60 | Gould & Curry, S. G. | Nev.. | 10,800,00 | 108,00 | 10. | 3,984,80 | Sept. 189 | 3,826,80 | Oct.. 1878 | 10.00 |
| 61 | Grand Prize, S. | Nev.. | 10,00,00 | 100,00 | 10 | 785,00 | Jan.. 189 | 495,00 | Mar. 1884 | .25 |
| 62 | Granite, S. L. | Idaho | 500,00 | 500,00 | 1 | ..... | ..... | 28,80 | Oct.. 1890 | .02 |
| 63 | Granite Mountain, S. | Mont | 10,00,00 | 4,00,00 | 2 | ..... | ..... | 11,000,00 | June 189 | .25 |
| 64 | Green Mountain, G. | Cal.. | 1,250,00 | 125,00 | 10 | * | ..... | 212,00 | Nov.. 1881 | .07½ |
| 65 | Hale & Norcross, G. S. | Nev.. | 1,200,00 | 112,00 | 10. | 5,142,80 | April 189 | 1,822,00 | Aug.. 1888 | .50 |
| 66 | Hecla Con., S. G. L. C. | Mont | 1,500,00 | 30,00 | 50 | ..... | ..... | 1,650,00 | June 1891 | .50 |
| 67 | Hel'a Mg. & Red, S. L. G. | Mont. | 3,315,00 | 663,00 | . | * | ..... | 19,497 | July. 1886 | .06 |
| 68 | Holmes, S. | Nev.. | 10,00,00 | 100,00 | 10 | 370,00 | May. 189 | 75,00 | April 1886 | .25 |
| 69 | Homestake, G. | Dak. | 12,50,00 | 125,00 | 10 | 230,00 | July. 187 | 4,718,75 | July. 1891 | .10 |
| 70 | Honorine, S. L. | Utah | 500,00 | 2,00,00 | . | 37,50 | April 188 | 125,00 | Sept. 188 | .05 |
| 71 | Hope, S. | Mont | 1,00,00 | 1,00,00 | 1 | * | ..... | 233,25 | April 1888 | .25 |
| 72 | Horn-Silver, S. L. | Utah | 10,00,00 | 400,00 | 2 | * | ..... | 4,50,00 | June. 1891 | .12½ |
| 73 | Hubert, G. | Colo. | 1,00,00 | 1,00,00 | . | * | ..... | 247,00 | Dec. 1888 | .00½ |
| 74 | Idaho, G. | Cal.. | 31,00 | 3,10 | 10. | * | ..... | 2,30,75 | July. 1891 | 3.00 |
| 75 | Illinois, S. | N. M. | 10,00 | 100,00 | . | * | ..... | 45,00 | April 1889 | .20 |
| 76 | Iron Hill, S. | Dak. | 2,50,00 | 250,00 | 1 | 134,00 | July. 188 | 156,25 | Nov.. 1887 | .07½ |
| 77 | Iron Mountain, S. | Mont. | 5,00,00 | 500,00 | 1 | * | ..... | 20,00 | Feb.. 1891 | .05 |
| 78 | Iron-Silver, S. L. | Colo. | 10,00,00 | 500,00 | 2 | * | ..... | 2,50,00 | April 1889 | .20 |
| 79 | Jackson, G. S. | Nev. | 5,00,00 | 50,00 | 10 | 237,50 | Nov.. 188 | 67,00 | Jan. 1891 | .10 |
| 80 | Jay Gould, G. S. | Mont | 2,00,00 | 40,00 | . | * | ..... | 459,00 | day 1890 | .04 |
| 81 | Kearsarge, C. | Mich. | 1,00,00 | 4,00 | 2 | 100,00 | Oct.. 188 | 1,350,00 | Dec. 1888 | 2.00 |
| 82 | Kentuck, S. G. | Nev. | 3,00,00 | 30,00 | 10 | 417,43 | Dec.. 188 | 610,00 | Sept. 1882 | .10 |
| 83 | La Plata, S. L. | Colo. | 2,00,00 | 200,00 | 10 | * | ..... | 423,00 | April 1887 | .30 |
| 84 | Leadville Con., S. L. | Colo. | 4,00,00 | 400,00 | 1 | * | ..... | 565,00 | Jan.. 1885 | .05 |
| 85 | Lexington, G. S. | Mont | 4,00,00 | 40,00 | 10. | * | ..... | 820,00 | Dec.. 1890 | 2.00 |
| 86 | Little Chief, S. L. | Colo. | 10,00,00 | 200,00 | 50 | * | ..... | 17,00 | July. 1891 | .05 |
| 87 | Little Rule, S. | Colo. | 50,00 | 500,00 | 1 | * | ..... | 96,00 | June. 1891 | .02 |
| 88 | Mammoth, S. L. C. | Utah | 10,00,00 | 400,00 | 25 | 110,00 | Oct.. 88 | 14,00 | Dec.. 1886 | .10 |
| 89 | Martin White, S. | Nev. | 10,00,00 | 100,00 | 10 | 1,225,00 | Oct.. 89 | 175,00 | day 1888 | .25 |
| 90 | Mary Murphy, S. G. | Colo. | 35,00 | 3,50 | 10 | * | ..... | 15,00 | Feb.. 1890 | 5.00 |
| 91 | Matchless, S. L. | Colo. | 50,00 | 500,00 | . | * | ..... | 169,00 | July. 1891 | .00½ |
| 92 | May Mazeppa, S. L. | Colo. | 1,00,00 | 100,00 | 1 | * | ..... | 32,00 | Dec.. 1890 | .01½ |
| 93 | Minas Prietas, G. S. | Mex.. | 1,00,00 | 100,00 | 1 | * | ..... | 1,829,00 | Mar 1876 | .50 |
| 94 | Minnesota, C. | Mich. | 1,00,00 | 40,00 | 2 | 420,00 | April 188 | 450,00 | Aug 1891 | .... |
| 95 | Mollie Gibson, S. | Colo. | 5,00,00 | 1,00,00 | . | * | ..... | 45,00 | Oct.. 1890 | .05 |
| 96 | Monitor, G. | S. Dak | 2,50,00 | 25,00 | 1 | ..... | ..... | 12,50 | Mar. 1886 | .03 |
| 97 | Mono, G. | Cal.. | 5,00,00 | 50,00 | 10. | 70,00 | Sept. 89 | 2,612,07 | June 1891 | .25 |
| 98 | Montana, Lt., G. S. | Mont. | 3,30,00 | 660,00 | . | * | ..... | 925,00 | April 1891 | .12½ |
| 99 | Morning Star, S. L. | Colo. | 1,00,00 | 10,00 | 1. | * | ..... | 390,00 | Dec.. 1887 | .07½ |
| 100 | Moulton, S. G. | Mont | 2,00,00 | 40,00 | . | * | ..... | 150,00 | Feb.. 1887 | .30 |
| 101 | Mount Pleasant, S. | Cal.. | 15,00 | 1,50,00 | . | * | ..... | 180,00 | Sept. 1890 | .40 |
| 102 | Mt. Diablo, S. | Nev.. | 5,00,00 | 50,00 | 10. | 137,50 | June 88 | 420,00 | July. 1891 | .10 |
| 103 | Napa, Q. | Cal.. | 70,00 | 100,00 | . | * | ..... | 229,95 | April 1889 | .10 |
| 104 | Navajo, G. S. | Nev.. | 10,00,00 | 100,00 | 10. | 300,00 | April 188 | 48,80 | May.. 1880 | .12½ |
| 105 | New California, G. | Colo. | 80,00 | 160,00 | . | * | ..... | 785,00 | April 1891 | 1.00 |
| 106 | New Guston, S. | Colo. | 550,00 | 11,00 | . | * | ..... | 30,00 | Dec.. 1886 | .06½ |
| 107 | N. Hoover Hill, G. S. | N. C. | 5,00,00 | 12,50 | 2½ | * | ..... | 2,400,00 | April 1883 | .50 |
| 108 | Northern Belle, S. | Nev.. | 5,000,00 | 50,00 | 10. | 425,00 | Jan.. 88 | 230,00 | May.. 1888 | .50 |
| 109 | North Belle Isle, S. | Nev.. | 10,00,00 | 100,00 | 10. | 395,00 | April 88 | 360,00 | April 1889 | .50 |
| 110 | North Star, G. | Cal.. | 1,00,00 | 100,00 | 1. | * | ..... | 11,75,00 | June 1891 | .50 |
| 111 | Ontario, S. L. | Utah | 15,00,00 | 150,00 | 10. | * | ..... | 1,595,80 | Jan.. 1886 | 1.00 |
| 112 | Ophir, G. S. | Nev.. | 10,00,00 | 100,00 | 10. | 4,210,64 | April 89 | 138,00 | Jan.. 1889 | .05 |
| 113 | Original, S. | Mont. | 1,50,00 | 60,00 | 2 | * | ..... | 95,00 | July. 1890 | .20 |
| 114 | Oro, S. L. G. | Colo. | 50,00 | 100,00 | . | * | ..... | 1,547,50 | July. 1891 | 1.00 |
| 115 | Osceola, C. | Mich. | 1,25,00 | 50,00 | 2 | 480,00 | April 187 | 880,00 | May.. 1891 | .10 |
| 116 | Parrot, C. | Mont. | 1,80,00 | 180,00 | 10 | * | ..... | 60,00 | Nov.. 1886 | .... |
| 117 | Peacock, S. G. C. | N. M. | 2,00,00 | 200,00 | 10 | * | ..... | 2,545,00 | Oct.. 1889 | .37½ |
| 118 | Piumas Eureka, G. | Cal.. | 1,406,25 | 140,62 | 10 | * | ..... | 2,280,00 | Feb.. 1888 | .40 |
| 119 | Plymouth Con., S. | Cal.. | 1,00,00 | 100,00 | 10 | * | ..... | 1,770,16 | Jan.. 1891 | 1.50 |
| 120 | Quicksilver, pref., Q | Cal.. | 4,300,00 | 43,00 | 10. | ..... | ..... | 643,86 | July. 1882 | .40 |
| 121 | " com., Q | Cal.. | 5,700,00 | 57,00 | 10 | ..... | ..... | 5,970,00 | Aug. 1891 | 5.00 |
| 122 | Quincy, C. | Mich. | 1,00,00 | 40,00 | 2 | 240,00 | Dec.. 86. | 50,00 | Dec.. 1890 | .01 |
| 123 | Reed National, S. G. | Colo. | 5,00,00 | 500,00 | 1 | * | ..... | 13,50 | July. 1891 | .01¼ |
| 124 | Rialto, G. | Colo. | 3,30,00 | 330,00 | 1 | * | ..... | 4,332,887 | Jan.. 1891 | .62½ |
| 125 | Richmond, S. L. | Nev. | 1,350,00 | 54,00 | 2 | * | ..... | 99,785 | Feb.. 1880 | .50 |
| 126 | Ridge, C. | Mich. | 500,00 | 23,00 | 2 | 219,93 | Mar.. 88 | 585,00 | Mar.. 1886 | .05 |
| 127 | Robinson Con., S. L. | Colo. | 10,00,00 | 200,00 | 5 | * | ..... | 15,00 | June 1891 | .00½ |
| 128 | Running Lode, G. | Colo. | 1,00,00 | 1,00,00 | 1 | * | ..... | 4,491,00 | June 1869 | 3.00 |
| 129 | Savage, S. | Nev.. | 11,20,00 | 112,00 | 10. | 6,64,00 | Nov.. 188. | 225,00 | Dec. 1890 | 3.33⅓ |
| 130 | Sheridan, S. G. | Colo. | 30,00 | 3,00 | 10 | * | ..... | 7,50 | April 1883 | .01 |
| 131 | Shoshone, G. | Idaho | 150,00 | 150,00 | . | * | ..... | 1,492,55 | April 1888 | .12½ |
| 132 | Sierra Buttes, G. | Cal.. | 2,225,00 | 12,250 | 1. | ..... | ..... | 102,00 | Jan.. 1871 | 1.00 |
| 133 | Sierra Nevada, S. G. | Nev.. | 10,00,00 | 100,00 | 10. | 6,296,91 | day 188 | 40,00 | May.. 1889 | .02 |
| 134 | Sierra Nevada, S. L. | Idaho | 1,00,00 | 1,00,00 | . | * | ..... | 32,50 | April 1891 | .02½ |
| 135 | Silent Friend. | Colo. | 5,00,00 | 500,00 | 1 | ..... | ..... | 265,00 | April 1889 | .10 |
| 136 | Silver Cord, S. L. G. | Colo. | 4,50,00 | 450,00 | 1. | ..... | ..... | 1,950,00 | July 1887 | .25 |
| 137 | Silver King, S. | Ariz. | 10,00,00 | 100,00 | 10. | 130,00 | Nov.. 189. | 375,00 | May 1891 | .05 |
| 138 | Silver Mg. of L. V., S. L. | N. M. | 50,00 | 500,00 | . | * | ..... | 8,162,50 | Oct.. 1890 | .10 |
| 139 | Small Hopes Con., S. | Colo. | 5,00,00 | 250,00 | 2 | * | ..... | 50,00 | Jan.. 1881 | .25 |
| 140 | Spring Valley, G. | Cal.. | 20,00 | 20,00 | 1 | 50,00 | Oct.. 188 | 2,595,00 | June 1888 | .05 |
| 141 | Standard, G. S. | Cal.. | 10,00,00 | 10,00 | 10 | 100,00 | June 89 | 155,00 | Nov.. 1881 | .05 |
| 142 | Stormont, S. | Utah. | 50,00 | 500,00 | . | * | ..... | 1,974,00 | Dec.. 1890 | .02 |
| 143 | St. Joseph, L. | Mo.. | 1,50,00 | 150,00 | 1 | * | ..... | 2,093,00 | Aug.. 1891 | 4.00 |
| 144 | Tamarack, C. | Mich. | 1,25,00 | 50,00 | 2 | 520,0 | April 88 | 1,250,00 | April 1882 | .10 |
| 145 | Tombstone, G. S. L. | Ariz. | 12,50,00 | 50,00 | 2 | * | ..... | 127,50 | May 1886 | .10 |
| 146 | United Verde, C. | Ariz | 3,00,00 | 300,00 | 1 | * | ..... | 337,50 | Nov.. 1888 | .37½ |
| 147 | Viola Lt., S. L. | Idaho | 7,50,00 | 150,00 | . | * | ..... | 20,00 | Dec.. 1889 | .05 |
| 148 | Ward Con., S. | Colo. | 2,00,00 | 200,00 | . | * | ..... | 25,00 | Oct.. 1889 | .25 |
| 149 | Woodside, S. L. | Utah | 10,00 | 10,00 | 1 | ..... | ..... | 4,50 | May.. 1891 | .10 |
| 150 | W. Y. O. D. | Cal.. | 3,15,00 | 15,00 | . | 11,25 | Feb 189 | 1,40,00 | April 1891 | .50 |
| 151 | Yankee Girl, S. | Colo. | 2,50,00 | 250,00 | 1 | * | ..... | 1,40,00 | April 1891 | .50 |
| 152 | Yellow Jacket, G. S. | Nev. | 12,00,00 | 120,00 | . | 3,58,00 | Mar.. 1889 | 2,184,00 | Aug.. 1871 | 2.50 |
| 153 | Young America, G. | Cal.. | ..... | ..... | .... | ..... | ..... | 175,00 | Jan.. 1884 | .10 |

## NON-DIVIDEND PAYING MINES.

| | Name and Location of Company. | | Capital Stock. | Shares. No. | Shares. Par | Assessments. Total levied. | Assessments. Date and am't of last. |
|---|---|---|---|---|---|---|---|
| 1 | Allegheny, S. | Colo.. | $5,000,000 | 500,000 | $10 | * | ..... |
| 2 | Alliance, S. G. | Utah. | 100,000 | 100,000 | 1 | ..... | ..... |
| 3 | Allouez, C. | Mich.. | 2,000,000 | 80,000 | 25 | $120,000 | Feb.. 1891 .20 |
| 4 | Alpha Con., G. S. | Nev.. | 3,000,000 | 30,000 | 100 | 737,000 | Jan.. 1890 .70 |
| 5 | Alta, S. | Nev.. | 10,080,000 | 100,800 | 100 | 112,500 | Sept. 1890 .25 |
| 6 | American Flag, S. | Colo.. | 1,250,000 | 125,000 | 10 | 3,359,800 | Sept. 1890 .50 |
| 7 | Amity, S. | Colo. | 250,000 | 250,000 | 1 | 300,000 | June 1887 .... |
| 8 | Anchor S. L. G. | Utah. | 3,000,000 | 150,000 | 20 | 410,000 | June 1886 .20 |
| 9 | Anglo-Montana, Lt. | Mont. | 600,000 | 120,000 | 5 | ..... | ..... |
| 10 | Astoria, G. | Cal... | 200,000 | 100,000 | 2 | ..... | ..... |
| 11 | Barcelona, G. | Nev.. | 5,000,000 | 200,000 | 25 | * | ..... |
| 12 | Bechtel Con., G. | Cal.. | 10,000,000 | 100,000 | 100 | 173,500 | 1883 .10 |
| 13 | Belmont, G. | Cal.. | 500,000 | 500,000 | 1 | * | ..... |
| 14 | Belmont, S. | Nev.. | 5,000,000 | 50,000 | 100 | 735,000 | April 1886 .10 |
| 15 | Best & Belcher, S. G. | Nev.. | 10,080,000 | 100,800 | 100 | 2,279,275 | Aug.. 1890 .25 |
| 16 | Black Oak, G. | Cal.. | 3,000,000 | 300,000 | 10 | * | ..... |
| 17 | Boston Con., G. | Cal.. | 10,000,000 | 100,000 | 100 | 170,000 | Nov.. 1883 .25 |
| 18 | Bremen, S. | N. M.. | 5,000,000 | 500,000 | 10 | * | ..... |
| 19 | Brownlow, G. | Colo.. | 250,000 | 250,000 | 1 | ..... | ..... |
| 20 | Brunswick, G. | Cal.. | 2,000,000 | 400,000 | 5 | * | ..... |
| 21 | Buckeye, S. L. | Mont. | 1,000,000 | 500,000 | 2 | ..... | ..... |
| 22 | Bullion, S. G. | Nev.. | 10,000,000 | 100,000 | 100 | 2,700,000 | Dec.. 1889 .25 |
| 23 | Butte & Boston, C. S. | Mont. | 5,000,000 | 200,000 | 10 | ..... | ..... .25 |
| 24 | Calaveras, G. | Cal.. | 500,000 | 500,000 | 1 | * | ..... |
| 25 | Carisa, G. | Wy.. | 500,000 | 100,000 | 5 | * | ..... |
| 26 | Carupano, G. S. L. C. | Ven.. | 200,000 | 100,000 | 2 | * | ..... |
| 27 | Cashier, G. S. | Colo. | 500,000 | 250,000 | 2 | ..... | ..... |
| 28 | Cherokee, G. | Cal.. | 1,500,000 | 150,000 | 10 | ..... | ..... |
| 29 | Chollar, S. G. | Nev.. | 11,200,000 | 112,000 | 100 | 1,540,000 | Nov.. 1889 .50 |
| 30 | Cleveland, T. | Dak.. | 1,000,000 | 500,000 | 2 | * | ..... |
| 31 | Colchis, S. G. | N. M.. | 500,000 | 50,000 | 10 | ..... | ..... |
| 32 | Colorado Silver | Colo.. | 1,625,000 | 325,000 | 5 | ..... | ..... |
| 33 | Comstock Tun. | Nev.. | 10,000,000 | 100,000 | 100 | 35,000 | Mar.. 1887 .15 |
| 34 | Con. Imperial, G. S | Nev.. | 5,000,000 | 50,000 | 100 | 1,875,000 | July. 1890 .05 |
| 35 | Con. New York, S. G. | Nev.. | 5,000,000 | 100,000 | 50 | 70,000 | Nov.. 1890 .15 |
| 36 | Con. Pacific, G. | Cal.. | 60,000,000 | 60,000 | 100 | 198,000 | June 1890 .10 |
| 37 | Con. Silver, S. | Colo.. | 2,500,000 | 250,000 | 10 | * | ..... |
| 38 | Crescent, S. L. | Colo.. | 3,000,000 | 300,000 | 10 | * | ..... |
| 39 | Crocker, S. | Ariz.. | 10,000,000 | 100,000 | 100 | 150,000 | June 1890 .15 |
| 40 | Crowell, G. | N. C. | 500,000 | 500,000 | 1 | ..... | ..... |
| 41 | Dahlonega, G. | Ga.. | 250,000 | 250,000 | 1 | ..... | ..... |
| 42 | Dandy, S. | Colo.. | 5,000,000 | 500,000 | 10 | * | ..... |
| 43 | Decaur, S. | Colo.. | 1,500,000 | 300,000 | 5 | * | ..... |
| 44 | Denver City, S. | Colo.. | 5,000,000 | 500,000 | 10 | * | ..... |
| 45 | Denver Gold, G. | Colo.. | 300,000 | 60,000 | 5 | ..... | ..... |
| 46 | Dickens-Custer, S. | Idaho | 2,100,000 | 420,000 | 5 | * | ..... |
| 47 | Durango, G. | Colo.. | 500,000 | 500,000 | 1 | ..... | ..... |
| 48 | Eastern Dev. Co., Lt. | N. S. | 1,500,000 | 150,000 | 10 | 990,000 | Mar.. 1886 1.00 |
| 49 | El Cristo, G. S. | U.S.C. | 1,000,000 | 500,000 | 2 | * | ..... |
| 50 | El Dorado, G. | Cal.. | 1,000,000 | 250,000 | 4 | ..... | ..... |
| 51 | El Talento, G. | U.S.C. | 1,000,000 | 500,000 | 2 | ..... | ..... |
| 52 | Emmons, S. L. | Colo.. | 2,000,000 | 2,000,000 | 1 | ..... | ..... |
| 53 | Empire, S. | Utah. | 10,000,000 | 100,000 | 100 | ..... | ..... |
| 54 | Eureka Tunnel, S. L. | Nev.. | 10,000,000 | 100,000 | 100 | ..... | ..... |
| 55 | Exchequer, S. G. | Nev.. | 10,000,000 | 100,000 | 100 | 865,000 | July. 1890 .25 |
| 56 | Found Treasure, G. S. | Nev.. | 10,000,000 | 100,000 | 100 | 81,500 | May. 1890 .25 |
| 57 | Gogebic I. Syn., I. | Wis.. | 5,000,000 | 200,000 | 25 | * | ..... |
| 58 | Gold Cup, S. | Colo.. | 500,000 | 500,000 | 1 | ..... | ..... |
| 59 | Golden Era, S. | Mont. | 2,000,000 | 200,000 | 10 | * | ..... |
| 60 | Gold Rock, G. | Cal.. | 1,000,000 | 500,000 | 2 | * | ..... |
| 61 | Goodshaw, G. | Cal.. | 3,000,000 | 100,000 | 100 | ..... | ..... |
| 62 | Grand Belt, C. | Tex.. | 12,000,000 | 120,000 | 100 | ..... | ..... |
| 63 | Grand Duke. | Colo. | 800,000 | 80,000 | 10 | ..... | ..... |
| 64 | Great Remance, G. | U.S.C. | 1,000,000 | 500,000 | 2 | * | ..... |
| 65 | Gregory Con., G. | Mont. | 3,000,000 | 300,000 | 10 | ..... | ..... |
| 66 | Harlem M. & M. Co., G. | Cal.. | 1,000,000 | 200,000 | 5 | ..... | ..... |
| 67 | Harter Con., G. | Cal.. | 1,000,000 | 100,000 | 10 | 22,000 | Oct.. 1890 .05 |
| 68 | Head Cent. & Tr., S. G. | Ariz. | 10,000,000 | 100,000 | 100 | ..... | ..... |
| 69 | Hector, G. | Cal.. | 1,500,000 | 300,000 | 5 | 45,000 | Jan.. 1889 .15 |
| 70 | Highland, C. | Mich. | 500,000 | 25,000 | 20 | ..... | ..... |
| 71 | Holywood. | Cal.. | 200,000 | 100,000 | 2 | ..... | ..... |
| 72 | Hortense, S. | Colo.. | 2,000,000 | 200,000 | 10 | ..... | ..... |
| 73 | Huron, C. | Mich.. | 1,000,000 | 40,000 | 25 | 280,000 | May. 1887 3.00 |
| 74 | Iron, Gold & Silver, S. | N. M.. | 2,000,000 | 200,000 | 10 | * | ..... |
| 75 | Ironton, I. | Wis.. | 1,000,000 | 40,000 | 25 | ..... | ..... |
| 76 | Iroquois, C. | Mich. | 1,250,000 | 50,000 | 25 | ..... | ..... |
| 77 | J. D. Reymert, S. | Ariz. | 10,000,000 | 100,000 | 100 | ..... | ..... |
| 78 | Julia Con., G. S. | Nev.. | 11,000,000 | 110,000 | 100 | 1,465,000 | Jan.. 1889 .10 |
| 79 | Lacrosse, G. | Colo.. | 1,000,000 | 100,000 | 10 | * | ..... |
| 80 | Lee Basin, S. | Colo.. | 5,000,000 | 500,000 | 10 | * | ..... |
| 81 | Madeleine, G. S. L. | Colo.. | 750,000 | 750,000 | 1 | * | ..... |
| 82 | Mammoth Gold, G. | Ariz.. | 245,0.0 | 49,000 | 5 | * | ..... |
| 83 | Mayflower Gravel, G. | Cal.. | 1,000,000 | 100,000 | 10 | 585,000 | Mar.. 1890 .56 |
| 84 | Medora, G. | Dak.. | 250,000 | 250,000 | 1 | ..... | ..... |
| 85 | Merrimac Con., G. S. | Colo.. | 5,000,000 | 500,000 | 10 | * | ..... |
| 86 | Mexican, G. S. | Nev.. | 10,000,000 | 100,000 | 100 | 2,791,960 | Oct.. 1890 .25 |
| 87 | Middle Bar, G. | Cal.. | 400,000 | 200,000 | 2 | * | ..... |
| 88 | Mike & Starr, S. C. | Colo.. | 1,000,000 | 200,000 | 5 | * | ..... |
| 89 | Milwaukee, S. | Mont. | 500,000 | 500,000 | 1 | 12,500 | May. 1891 .01 |
| 90 | Monitor, G. | Colo.. | 100,000 | 1,000,000 | 1 | * | ..... |
| 91 | Mutual Mg. & Sm. | W'sh. | 100,000 | 100,000 | 1 | * | ..... |
| 92 | Native, C. | Mich. | 1,000,000 | 40,000 | 25 | ..... | ..... |
| 93 | Neath, G. | Colo.. | 1,000,000 | 100,000 | 10 | ..... | ..... |
| 94 | Nevada Queen, S. | Nev.. | 10,000,000 | 100,000 | 100 | 200,000 | Oct.. 1889 .25 |
| 95 | New Germany, G. | N. S. | 100,000 | 100,000 | 1 | * | ..... |
| 96 | New Pittsburg, S. L. | Colo.. | 2,000,000 | 200,000 | 10 | * | ..... |
| 97 | N. Commonw'th, S. | Nev.. | 10,000,000 | 100,000 | 100 | 85,000 | April 1890 .25 |
| 98 | North Standard, G. | Cal.. | 10,000,000 | 100,000 | 100 | 20,000 | Nov.. .... |
| 99 | Noonday. | Cal.. | 600,000 | 60,000 | 10 | 208,000 | Dec.. 1881 .10 |
| 100 | Oneida Chief, G. | Cal.. | 500,000 | 125,000 | 100 | * | ..... |
| 101 | Oriental & Miller, S. | Nev.. | 10,000,000 | 400,000 | 25 | ..... | ..... |
| 102 | Osceola, G. | Nev.. | 5,000,000 | 500,000 | 10 | ..... | ..... |
| 103 | Overman, G. S. | Nev.. | 2,300,000 | 115,200 | 100 | 3,832,800 | Dec.. 1889 .25 |
| 104 | Park, S. | Colo.. | 2,000,000 | 200,000 | 10 | ..... | ..... |
| 105 | Peer, S. | Ariz.. | 10,000,000 | 100,000 | 100 | 165,000 | Oct.. 1890 .10 |
| 106 | Peerless, S. | Ariz.. | 10,000,000 | 100,000 | 100 | 405,000 | Oct.. 1890 .15 |
| 107 | Phœnix. | Ariz.. | 500,000 | 500,000 | 1 | * | ..... |
| 108 | Phœnix Lead, S. L. | Colo.. | 100,000 | 100,000 | 1 

## STOCK MARKET QUOTATIONS.

### Baltimore, Md. July 30.

| COMPANY. | Bid. L. | Asked. H. |
|---|---|---|
| Atlantic Coal | $1.00 | $1.25 |
| Balt. & N. C. | .... | .10 |
| Big Vein Coal | .... | 1.00 |
| Conrad Hill | .... | .10 |
| Cons. Coal | .24@.25 | .26@.28 |
| Diamond Tunnel | .20 | .35 |
| George's Crk. C. | 1.06 | 1.10 |
| Lake Chrome | .10 | .15 |
| Maryland & Charlotte | .... | .... |
| North State | .... | .... |
| Silver Valley | .55 | .70@.75 |

Prices bid and asked, lowest and highest, during the week ending July 23.

### Birmingham, Ala. July 29.

| COMPANY. | Bid. L. | Asked. H. |
|---|---|---|
| Ala. Coal & I. Co. | .... | $100 |
| Ala. Conn. C. & C. Co. | .... | $23 |
| Ala. R. Mill Co. | $100 | .... |
| *Alice Furnace | $100 | .... |
| Anna Howe G. Mg. Co. | $¼ | $½ |
| Bessemer Land | $29 | $30 |
| Bir. Mg. & Mfg. | .... | $35 |
| Cahaba Coal Mg. Co. | .... | $61 |
| Camille Gold Mg. Co. | $½ | $¾ |
| De Bardeleben C. & I. Co. | $81/2 | $91/2 |
| Decat. L. Imp. | $83/4 | $91/2 |
| Decatur Min. L. | .... | $19 |
| Ensley Land | $7½ | $9 |
| *Eureka | .... | .... |
| Florence L. & Mg. Co. | .... | $181/4 |
| Gadsen Land | $3⅜ | $3⅞ |
| Hecla Coal Co. | .... | .... |
| Hen. S. & M. Co. | $2¾ | $4¼ |
| Jagger-Townl'y C. & C. Co. | $8½ | $10 |
| Mag-Ellen | $100 | .... |
| Mary Lee C. & R. Co. | .... | $25 |
| Sheffield C. & I. Co. | $52½ | $55 |
| Sloss I. & S. | $18½ | $21 |
| †Sloss I. & S. | $85 | $87 |
| ‡‡ Sloss I. & S. | $49 | $52½ |
| Ten. C. & I. Co. | $32½ | $35 |
| " pref. | $86 | $88 |
| Tuscaloosa C. I. & L. Co. | .... | $24 |
| Vulcan C. & C. Co. | $5 | $7½ |
| Woodstock I. Co. | $28 | $29 |

* Bonds. † First mortgage. ‡‡ Second mortgage. ** Without interest.

### Pittsburg, Pa. July 30.

| COMPANY. | B. | A. |
|---|---|---|
| Allegheny Gas Co. | $42.00 | $..... |
| Bridgewater Gas Co. | .... | .... |
| Chartiers Val. Gas. | 8.75 | 9.38 |
| Columbia Oil Co. | .... | 2.00 |
| Consignee Mg. Co. | .20 | .50 |
| Consolidated Gas Co. | 45.00 | .... |
| East End E. Light Co. | .... | .... |
| East End Gas Co | .... | .... |
| Forest Oil | .... | .... |
| Hazlewood Oil Co. | .... | .... |
| Hidalgo Mining | .... | 3.63 |
| La Noria Mining | .30 | .40 |
| Luster Mg. Co. | 12.63 | 13.13 |
| Mansfield C. & C. Co. | .... | .... |
| Manuf'turers Gas Co. | 24.00 | 25.00 |
| Nat. Gas Co. of W. Va. | 57.50 | 60.00 |
| N. Y. & Clev. Gas Coal | .... | 40.00 |
| Ohio Valley Gas. | 20.00 | .... |
| Pennsylvania Gas | .... | 11.00 |
| People's Natural Gas. | .... | 30.00 |
| People's N. G. & P. Co. | 7.25 | .... |
| Philadelphia Co | 11.25 | 11.38 |
| Pine Run Gas Co. | .... | .... |
| Pittsburg Gas | 72.00 | .... |
| Silverton Mg. Co. | 1.75 | 2.00 |
| South Side Gas | .... | .... |
| Sterling Silver Mg. Co. | 4.00 | 5.00 |
| Tuna Oil Co. | .... | 55.00 |
| Union Gas | .... | .... |
| Washington Oil Co. | .... | 91.50 |
| W house A. B. Co. | 99.50 | .... |
| W'house Brake Co | .... | 75.00 |
| W'house E. Light | 10.88 | 11.75 |
| W'moreland & Camb | .... | .... |
| Wheeling Gas | .... | 20.00 |

### St. Louis. July 29.

CLOSING PRICES.

| COMPANY. | Bid. | Asked. |
|---|---|---|
| Adams, Colo. | $ .... | $ .... |
| American & Nettie | .25 | .27½ |
| Aztec, N. Mex. | .... | .10 |
| Bi-Metallic | 34.00 | .... |
| Central Silver | .... | .02 |
| Cleveland, Colo. | .... | .... |
| Elizabeth | 1.60 | 1.75 |
| Four Mile | .... | .25 |
| Gold King | .... | .... |
| Granite Mountain, Mont. | 23.25 | 24.00 |
| Hope | .... | 1.50 |
| Ingram | .... | .... |
| I. X. L., Colo. | .... | .... |
| La Union | .... | .... |
| Little Albert | .01½ | .02½ |
| Major Budd, Mont. | .... | .... |
| Mexican Imp | .... | .09 |
| Mickey Breen | .52½ | .55 |
| Montrose Placer, Colo., | .68¾ | .70 |
| Mountain Key | .45 | .50 |
| Nellie | .04 | .... |
| Old Colony | .... | .... |
| Pat Murphy, Colo. | .05 | .05½ |
| Puzzle | .... | .... |
| Richmond Hill | .... | .... |
| St. Louis & Aspen | .... | 4.00 |
| Samoa | .... | .... |
| Silver Age, Colo. | .... | 1.00 |
| Small Hopes, Colo. | .77½ | .80 |
| Tourtelotte | .... | .... |
| West Granite, Mont. | .... | .... |
| Wire Patch | .... | .... |
| ma, Ariz. | .40 | .50 |

### Trust Receipts.

Sales at the New York Stock Exchange week ending July 31:

| | Sales. | Price H. | Price L. |
|---|---|---|---|
| *American Cotton Oil | .... | .... | .... |
| National Lead | 34,451 | 17⅛ | 14¾ |

* Trust receipts.

### Trust Stocks. July 31.

The following closing quotations are reported to-day by C. L. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

| | |
|---|---|
| Am. Cotton Oil, Com. | $17½@$18½ |
| " " " Pfd. | 35 @ 36 |
| Am. Sugar Refineries, Com. | 76 @ 76¼ |
| " " " Pfd | 86⅝@ 87½ |
| Distillers' & Cattle Feeders'. | 45 @ 45½ |
| Linseed Oil | 20 @ 28 |
| National Cordage, Com. | 87¾@ 88 |
| " " Pfd. | 98 @100 |
| National Lead | 14⅞ a 15 |
| Standard Oil | 160 @161½ |
| W. U. Beef Co. | 10 @ 14 |

### Foreign Quotations.

#### London. July 25.

| COMPANY. | Highest. | Lowest. |
|---|---|---|
| Almada, Mex. | 2s. 3d. | 1s. 9d. |
| Amador, Cal. | 3s. | 2s. 6d. |
| American Belle, Colo. | 16s. | 15s. |
| Appalachian, N. C. | 2d. | 1d. |
| Canadian Phos., Can. | 10s. | 5s. |
| Colorado, Colo. | 2s. 3d. | 1s. 9d. |
| Comstock, Utah. | .... | .. |
| Cons. Esmeralda, Nev. | 1s. 6d. | 1s. |
| Cordova | .... | .... |
| De Lamar, Idaho. | £1¼ | £1⅛ |
| Denver Gold, Colo. | 6d. | 6d. |
| Dickens Custer, Idaho. | 2s. 3d. | 2s. |
| East Arevalo, Idaho. | 1s. 3d. | 9d. |
| El Callao, Venezuela. | £⅝ | £⅝ |
| Elkhorn, Mont. | £1⅛ | £1⅜ |
| Elmore, Idaho. | 1s. 9d. | 1s. 3d. |
| Emma, Utah. | 2s. 3d. | 2s. |
| Empire, Mont. | 1s. 3d. | 1s. |
| Flagstaff, Utah. | 7s. 6d. | 7s. 3d. |
| Garfield, Nev | 9s. | 3d. |
| Golden Leaf, Mont | 3s. | 2s. 6d. |
| Jay Hawk, Mont. | 1s. 3d. | 9d. |
| Josephine, Cal. | 1s. 3d. | 3d. |
| Kohinoor, Colo. | 1s. 3d. | 9d. |
| La Luz, Mex. | 1s. 9d. | 1s. 6d. |
| La Valera, Mex. | 17s. 6d. | 15s. |
| Mammoth Gold, Ariz. | 3s. 3d. | 2s. 9d. |
| Montana, Mont. | 7s. | 6s. 6d. |
| New California, Colo. | 4s. 6d. | 4s. |
| New Consolidated | 9d. | 3d. |
| New Eberhardt, Nev. | 1s. 6d. | 1s. |
| Newfoundland, N. F. | 3s. | 2s. 6d. |
| N. Gold Hill, N. C. | 1s. 3d. | 1s. |
| New Guston, Colo. | £1¼ | £¾ |
| New Hoover Hill, N.C. | 6d. | 3d. |
| New La Platte, Colo. | 1s. | 6d. |
| New Russell, N. C. | 1s. 3d. | 9d. |
| New Viola, Idaho | 1s | 6d. |
| Old Lout, Colo | £3-16 | £1-16 |
| Palmarejo, Mex. | 13s. | 13s. |
| Parker Gold, N. C. | 9d. | 3d. |
| Pinos Altos, Mex. | 6s. 6d. | 5s. 6d. |
| Pittsburg Cons., Nev. | 4s. 6d. | 3s. 6d. |
| Richmond Con., Nev. | £1 | £¾ |
| Ruby, Nev. | 9d. | 3d. |
| Sam Christian, N. C. | 9d. | 3d. |
| Sierra Buttes, Cal. | 5s. 6d. | 4s. 6d. |
| " Plumas E. r., Cal. | £⅝ | £⅜ |
| United Mexican, Mex. | 5s. 6d. | 4s. 6d. |
| U. S. Placer, Colo. | 6d. | 6d. |
| West Argentine, Colo. | 1s. 9d. | 1s. 3d. |
| Yankee Girl, Colo. | £1 4s. 6d. | £1 3s. 6d. |

#### Paris. July 25.

| | Francs. |
|---|---|
| Belmez, Spain | 800.00 |
| Callao, Venez | 10.50 |
| Callao Bis., Venez | 15.00 |
| East Oregon, Ore | 4.00 |
| Forest Hill Divide, Cal. | 80.00 |
| Golden River, Cal | 130.00 |
| " " parts | 30.00 |
| Lexington, Mont | 95.00 |
| " parts | 2.50 |
| Rio Tinto, Spain | 583.12 |
| Tharsis, Spain | 163.75 |

## CURRENT PRICES.

Those quotations are for wholesale lots in New York.

### CHEMICALS AND MINERALS.

**Acid**—Acetic, No. 8, pure, 1,040, ℔ lb. .04½
Commercial, in bbls. and cbys. .01¾@.02¼
Carbonic, liquefied .40
Chromic, ch. pure .$1.00
for batteries .50
Hydrobromic, dilute, U. S. P. .35
Hydrocyanic, U. S. P. .55
Hydrofluoric .30
**Alcohol**—95%, ℔ gall. 2.40
Absolute 4.00
Ammoniated 3.00
**Alum**—Lump, ℔ lb. .1¾
Ground, ℔ lb. .1⅞
Powdered .4@5
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ lb. .1½@2⅜
**Alumina Chloride**—Pure, ℔ lb. 1.25
Amalgamating solution, ℔ lb. .60
**Ammonia**—Sul., in bbls., ℔ lb. .3-16
Carb, ℔ lb. .14
Muriate, white, in bbls., ℔ lb. .08½
**Ammoniates**—Fish guano, dried .$21
wet 8 50@ 9 50
Acid phosphate, 14% per cent. 72½@ 80
**Aqua Ammonia**—(in cbys) 18° ℔ lb. .03¾
20°, ℔ lb. .04¾
26°, ℔ lb. .08¾
**Antimony**—Oxymur, ℔ lb. 4¾
**Argols**—Red, powdered, ℔ lb. .15
**Arsenic**—White, powdered ℔ lb. .3@3¼
Red ℔ lb. 5@5½
White at Plymouth, ℔ ton .£12 2 6
**Asbestos**—Am., ℔ ton .$50@$300
Italian, ℔ ton, c. i. f. L'pool .£18@£60
**Ashes**—Pot, 1st sorts, ℔ lb. .4¾@4⅞
Pearl 6¼@6½
**Asphaltum**—P. ton .13.00
Prime Cuban, ℔ lb. .4½@5½c.
Hard Cuban, P ton .$28.00
Trinidad, refined, ℔ ton .$30.00
Egyptian 8@9
**Baryta**—Carbonate, pure, ℔ lb. .45
Carbonate, commercial, ℔ lb. .10
Chlorate, crystal. ℔ lb. .75
Chloride, commercial, ℔ lb. .10
pure, ℔ lb. .16
Iodide, ℔ oz. .40
Nitrate, powdered, ℔ lb. .15
Sulph., Am. prime white .17@20
Sulph., foreign, floated, ℔ ton. .19½@21.50
Sulph., off color, ℔ ton .11.50@14.00
Carb., lump, f. o. b. L'pool, ton .£6
No. 1, Casks, Runcorn, " " .£4 10 0
No. 2, bags, Runcorn, " " .3 15 0
**Beeswax**—Refined, ℔ lb. .32
**Benzole**—℔ gall. 1.50
**Bichromate of Potash**—Scotch. 10@12
American 10@12
**Bichromate of Soda**. .8½@11½
**Borax**—Refined, ℔ lb. 11
Concentrated 8¼@8½
Refined " Liverpool ℔ ton £29
**Bromine**—℔ lb. .55
**Cadmium Bromide**—℔ lb. 2.00
Iodide, ℔ lb. 5.50
**Chalk**—℔ ton 1.75
Precipitated, ℔ lb. 4¾@5
**China Clay**—English, ℔ ton. 13½@21.00
Southern, ℔ ton 13.50
**Chlorine Water**—℔ lb. .10
**Chrome Yellow**—℔ lb. 10@25
**Chromalum**—Pure, ℔ lb. .40
Commercial, ℔ lb. 1.12
**Cobalt**—Oxide, ℔ lb. 2.50@2.90
**Copper**—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary .63
" " extra .3¾
Nitrate, ℔ lb. .10
**Copperas**—Common, ℔ 100 lbs. .70
Best, ℔ 100 lbs. 75@1.00
Liverpool, ℔ ton, in casks. £1 15s.
**Corundum**—Powdered, ℔ lb. 4½@.9
Flour, ℔ lb. .3
**Cream of Tartar**—Am. 99%. 24½
Powdered, 99 p. c. 25
**Cryolite**—Powdered, ℔ lb. .12
**Emery**—Grain, ℔ lb. (℔ kg.). 4½@5
Flour, ℔ lb. 2½@10
**Epsom Salt**—℔ lb. .1¾
**Feldspar**—Ground, ℔ ton 20.00
**Fluorspar**—Powdered, No. 1, ℔ ton. 30 00
**Fuller's Earth**—Lump, ℔ bbl. 90@95
Powdered, ℔ lb. 1⅞@2
**Fusel Oil**—℔ gall. .80
Purified, ℔ gall. .75
**Gelatine**—Cox's, doz. 2.00
Coignet's Gold Label, ℔ lb. 1.00
Silver Label, ℔ lb. .88
Heinrich's Gold Label, ℔ lb. .75
for emulsion, ℔ lb. 1.00
Nelson s No. 1, ℔ lb. 1.10
No. 1, Shreds, ℔ lb. 1 25
No. 3, ℔ lb. .75
**Glauber's Salt**—in bbls., ℔ lb. .¾
**Glass**—Ground, ℔ lb. .10
**Glue**—Brown, ℔ lb. .20
White, ℔ lb. .30
**Glycerine**—Concent., ch. pure, ℔ lb. 25
**Gold**—Chloride, pure, crystals, ℔ oz. 12.00
pure, 15 gr., c. v., ℔ doz. 5 40
liquid, 15 gr, g. s. v., ℔ doz. 5.50
Chloride and sodium, ℔ oz 6.00
15 gr., c. v., ℔ doz. 2.88
Oxide, ℔ oz. 27 25
**Gypsum**—Calcined, ℔ bbl. 1.25@1.50
**Iodine**—Resublimed 2.75
**Iron**—Nitrate, 40°, ℔ lb. 1½
47°, ℔ lb. 2½
**Kaolin**—*See China Clay.*
**Lead**—Red, ℔ lb. 6¾@7¼
White, American, in oil, ℔ lb. 6½@7¼
White, English, ℔ lb. 8¾@9
Acetate, or sugar of, white 12@13
Nitrate 9@10
**Lime Acetate**—Amer. Brown 1 10@1.20
" Gray 2.00@2.15
**Litharge**—Powdered, ℔ lb. 6½@7¼
English flake, ℔ lb. 9@9½
**Magnesite**—Green, ℔ ton 20.00
**Manganese**—Crude, per unit. 23@28
Oxide, ground, per lb. 2½@6½
**Marble Dust**—℔ bbl. 1.25
**Mercuric Chloride**—(*Corrosive Sublimate*) ℔ lb. .89
Powdered, ℔ lb. .99
**Metallic Paint**—Brown per ton. $20@25
Red. $20@25
**Mineral Wool**—Ordinary slag. 1½
Ordinary rock 2½
**Mica**—In sheets according to size. 1st quality, ℔ lb. 25@$6.00
**Naphtha**—Black 60
**Nitre Cake**—℔ ton 8.00
**Ochre**—Rochelle. 1.35@1.50
Washed Nat Oxford, Lump. 6½@6¾
Washed Nat Oxford, Powder. 7@7½
Golden ¾@4
Domestic ¾@1½
**Oils, Mineral**
Cylinder, light filtered .15@20
Dark filtered .11@15
Extra cold test .18@20
Dark steam refined .10@18
**Phosphorus**—℔ lb. 55@30
Precip., red .88
white .93
**Plumbago**—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7
**Potash**—Kieserite .$9@$10
**Potassium**—Cyanide, ℔ lb., C. P. .72
Special .50
Fused .45
Bromide, ℔ lb. .33
Chlorate, English, ℔ lb 11@14
Chlorate, powdered 13@14
Carb, ℔ lb. 544.70@5
Caustic, ℔ lb. 7½@8
Iodide 2,65@2.70
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb. 10½@11
Yellow Prussiate 32½@35
Red Prussiate 42@45
**Pumice Stone**—Select lumps, lb. 3¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2 @2⅜
**Pyrites**—Non-cupreous, p. units. 11@.12
**Quartz**—Ground, ℔ ton 14.00@16.00
**Rotten Stone**—Powdered, ℔ lb. 3½
Lump, ℔ lb. 5½@15
Original cks. 4½@5½
Rubbing stone 7
**Sal Ammoniac**—in bbls., ℔ lb. 10½
**Salt**—Liverpool, ground, ℔ sack 75@80
Turk's Island, ℔ bush 25@28
**Salt Cake**—℔ ton 8 00
**Saltpeter**—Crude, ℔ lb. 3¾@4¾
Refined, ℔ lb. 6@8
**Soda**—Prussiate 17½@18
Phosphate .7@18
Stannate 8@15
**Strontium**—Nitrate, ℔ lb. 9½@10
**Sulphur**—Roll, ℔ lb. .021
Flour, ℔ lb. .02
**Sylvinit**, 23@27%, S.O.P., per unit. 40@42½
**Talc**—Ground French, ℔ lb. 1¼@1½
Domestic, ℔ ton .$18@$20
c. i. f. Liverpool, ℔ ton £4 5
**Terra Alba**—French. 90@1.00
English .75@80
American, No. 1. —@—
American, No. 2. 40@50
**Tin**—Crystals, in kegs or bbls. 16½
feathered or flossed. 25
Muriate, single 7
Double or strong, 54° B. 9
Oxy. or nitro 10
Bar 25
**Vermillion**—Imp. English. .90 @ .95
Am. quicksilver, bulk .67 @—
Am. quicksilver, bags .68 @ .71
Chinese .95 @1 00
Trieste .90 @ .95
American 11½@ .12
Artificial 8 @ .35
**Zinc**—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 7⅛
Paris, Red Seal, ℔ lb. 8¼
Muriate solution 4
Sulphate crystals, in bbls., ℔ lb. 3
* Spot.

### THE RARER METALS.

**Aluminum**—Pure, per lb. .$ .90
**Arsenic**—(Metallic), per lb. .40
**Barium**—(Metallic), per gram. 4.00
**Bismuth**—(Metallic), per lb. 2.75
**Cadmium**—(Metallic), per lb. 1.00
**Calcium**—(Metallic), per gram. 10.00
**Cerium**—(Metallic), per gram. 7.50
**Chromium**—(Metallic), per gram. 1 00
**Cobalt**—(Metallic), per lb. 6.00
**Didymium**—(Metallic), per gram. 9.00
**Erbium**—(Metallic), per gram. 7.50
**Gallium**—(Metallic), per gram. 140.00
**Glucinum**—(Metallic), per gram. 12.00
**Indium**—(Metallic), per gram. 9.00
**Iridium**—(Metallic), per oz. 7.00
**Lanthanum**—(Metallic), per gr. 10.00
**Lithium**—(Metallic), per gram. 10.00
**Magnesium**—Per lb. 4.50
**Manganese**—(Metallic), per lb. 1.10
Chem. pure, per oz. 10.00
**Molybdenum**—(Metallic), per gm .50
**Niobium**—(Metallic), per gram. 5.00
**Osmium**—(Metallic), per oz. 65.00
**Palladium**—(Metallic), per oz. 35.00
**Platinum**—(Metallic), per oz. 16.50@20.00
**Potassium**—(Metallic), per lb. 28.00
**Rhodium**—(Metallic), per gram. 5.00
**Ruthenium**—(Metallic), per gm. 5.50
**Rubidium**—(Metallic), per gram. 2.00
**Selenium**—(Metallic), per oz. 1.80
**Sodium**—(Metallic), per lb. 2.50
**Strontium**—(Metallic), per gm. .60
**Tantallum**—(Metallic), per gram. 9.00
**Telurium**—(Metallic), per lb. 5.00
**Thallium**—(Metallic), per gram. .25
**Titanium**—(Metallic), per gram. 2.25
**Thorium**—(Metallic), per gram. 17.00
**Tungsten**—(Metallic), per lb. 1.00
**Uranium**—(Oxide), per lb. 5.00
Metallic, per gm. .20
**Vanadium**—(Metallic), per gm. 22.00
**Yttrium**—(Metallic), per gram. 9.00
**Zirconium**—(Metallic), per oz. 65.00

### BUILDING MATERIAL.

**Bricks**—Fronts, nominal, ℔ 1,000.
Croton 14.00@
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore @35.00
**Building Stone**—Amherst freestone, ℔ cu. ft. 35@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft. 45@1.25
Granite, Scotch, ℔ cu. ft. 1.09@1.15
**Cement**—Rosendale, ℔ bbl. 85@1.10
Portland, American, ℔ bbl. 2.25@2.45
Portland, foreign, ℔ bbl. 2.40@2.50
Portland, " special brands 2.60@2.85
Roman, ℔ bbl. 2.75@2.90
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.25@8.50
**Slate**—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black roofing, ℔ 100 sq. ft. 4.25@5.50
**Lime**—St. John, com and finish., ℔ bbl. .90@.95
Glens Falls, com. and fin., ℔ bbl. 85@1.10

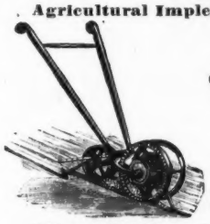
# NEW YORK PRICES CURRENT AUGUST 1, 1891.

In the interest of the extension of the markets for American manufactures the ENGINEERING AND MINING JOURNAL has secured the services of gentlemen thoroughly acquainted with the export trade and with foreign markets, and it offers its services to foreign buyers who may desire information concerning any article whatever of American manufacture. No charge will be made for these services, either directly or indirectly through commissions on goods purchased. The proprietors of the ENGINEERING AND MINING JOURNAL are neither commission merchants nor exporters, but they have many sources of information, both at home and in foreign countries, and place these at the service of manufacturers and exporters here and of importers and consumers in other countries.

The names and addresses of the manufacturers of goods quoted in this list can be obtained by applying at this office.

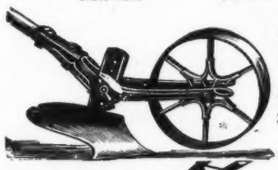
**Discounts are for Wholesale Export Only.**

## Agricultural Implements.



"Planet, Jr." No. 2 Seed Drill, $9. Dis. 30%.

Combined Drill Cultivator Rake, Plow, etc., $12. Dis. 30%.

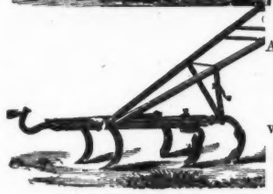


"Fire Fly" single-wheel Hoe, Cultivator and Plow, $5.

"Fire Fly" Hand Plow, $2.50.

30 % discount, f.o.b. New York.

All Steel Horse Hoe and Cultivator combined, with wheel, $6 75-100 net.



All Steel Plain Cultivator.

With wheel, $4.50; without wheel, 60c.

### HAY FORKS.

Standard Spading Forks.
Solid Steel Shanks, Gold Bronze Finish, Patent Overcaps.
Per doz.

8 D 4 light angular tine, iron D, plain ferrules, $17.00.
8 D S 4 light angular tine, iron D, strapped ferrules, $18.50.
11 D 4 light angular tine, iron D, plain ferrules, blue, half polished, $16 00.
13 D 4 light angular tine, iron D, strapped ferrules, blue, half potished, $17.50.
15 D 5 tine, angular tine, iron D, plain ferrules, $24.00.
17 D 5 tine, angular tine, iron D, strapped ferrules, $25.50.

Flat Tines.

D 4 tine spading fork, flat tine, iron D, plain ferrules, $17.00.
D S 4 tine spading fork, flat tine, iron D, strapped ferrules, $18.50.

74 4 tine spading fork, flat tine, 4 ft. handles, plain ferrules, $16.00.
74 S 4 tine spading fork, flat tine, 4 ft. handles, strapped ferrules, $17.50.
Dis., 65 and 5% and 2½.

Manure Forks.

4 D, oval, 4 tine, 13 in. tine, iron D, plain ferrules, $13.50.
4 D S, oval, 4 tine, 13 in. tine, iron D, strapped ferrules, $15.00.
5 D, oval, 5 tine, 13 in. tine, iron D, plain ferrules, $20.50.
5 D S, oval, 5 tine, 13 in. tine, iron D, strapped ferrules, $22.00.
6 D oval, 6 tine, 13 in. tine, iron D, plain ferrules, $23.50.
6 D S, oval, 6 tine, 13 in. tine, iron D, strapped ferrules, $25.00.
Dis., 65 and 5% and 2½.

### PLOWS.

Reversible Oneonta Clipper.

16. Oneonta Clipper, Reversible, Iron beam Cutter..... $14
" Oneonta Clipper, Reversible, Iron Wheel and Cutter..... 15
18. Oneonta Clipper, Reversible, Iron Beam Cutter..... 15
" Oneonta Clipper, Reversible, Iron Beam, Wheel and Cutter.... 16
Hard Metal, Reversible, Iron Beam Cutter.....
17. Hard Metal, Reversible, Iron Beam, Wheel and Jointer..... 17
19. Hard Metal, Reversible, Wood Beam Cutter..... 16
" " " " " " Wheel and Jointer..... 17
20. Steel Mould Board, Reversible, Wood Beam Cutter 15
" " " " " " Wheel and Cutter..... 16

Iron Beam Plows.

Two-horse Sod and Stony Land.... 8.50 plain.
Curtis's Sod Two horse..... 11.5¢ "
" " " " ..... 13.00 cutter.
" " " " ..... 14.25 wheel & cutter.

Subsoil Plows.

Two-horse 9.50 Draft Rod.
" " 11.00 Wheel and Draft Rod.

Hitchcock's Potato Digger and Shovel Plow.

Improved adjustable handle shovel plow..... 7.00
Hitchcock's Potato Digger..... 8.00
" " " and shovel plow..... 10.50
Dis. 30%.

### HOES.

Blade Solid Shank Hoes.



| | | | | |
|---|---|---|---|---|
| Field, 7 | × 5 | in., | selected handles.. | $8.00 |
| " 7⅛ | × 4½ | " | " " .. | 8.00 |
| " 8 | × 4¾ | " | " " .. | 8.00 |
| " 8½ | × 4½ | " | " " .. | 8.00 |
| " 8 | × 5 | " | " " .. | 8.00 |

Field Socket Hoes..... .... $9.00

Dis., 65% and 5%.

### RAKES.

The S. R. N. Improved.

| | |
|---|---|
| 20 Teeth | $28.00 |
| 22 " | 29.00 |
| 24 " | 30.00 |
| 26 " | 31.00 |

Dis., 33⅓%.

Chieftain Lock Lever

| | |
|---|---|
| No. 1 | $16.00 |
| No. 2 | 16.00 |
| No. 5 | 15.00 |

Iron wheels, $1 extra. With Pole, Double Tree and Neck Yoke, $1 extra. 22 cubic feet packed, 400 lbs. gro., 225 lbs. net.

Golden Farmer Self-Dumping Rake, $19.00; 22 cu. ft., 430 lbs. gro., 250 lbs. net.
Chieftain Hay Tedders, $27.00; 700 lbs. gro., 450 lbs. net.
Potato Diggers, $5.00; 100 lbs. gro., 60 lbs. All net cash, f.o.b. ship New York or Boston.

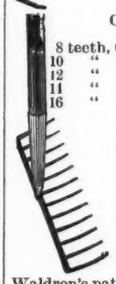
### RAKES (GARDEN).

Malleable Iron Garden Rakes, Per Doz.

| | | Plain. |
|---|---|---|
| 8 teeth, 6-ft. handles, straight shank | | $5.00 |
| 10 " " " " " | | 5.50 |
| 12 " " " " " | | 6.00 |
| 14 " " " " " | | 6.50 |
| 16 " " " " " | | 7.00 |

For braced goods, add 50 cents per dozen to list.

Cast Steel Garden Rakes, Per Doz.



| | | Plain. | Braced. |
|---|---|---|---|
| 8 teeth, 6-ft. handles | | $8 00 | $9.50 |
| 10 " " " | | 9.00 | 10.50 |
| 12 " " " | | 10.00 | 11.50 |
| 14 " " " | | 11.00 | 12.50 |
| 16 " " " | | 12,00 | 13.50 |

Lawn Rakes and Gravel Rakes same price as Garden Rakes.
Discounts on Rakes from list.
The P. H. & M. Co., 60 and 10%.
W. & C. Mfg. Co., 70%.
S. F. & T. Co., 70 and 5%.
G. T. Co., 70 and 5%.
Phila. S. H., 60, 10 and 5%.

### SCYTHES (GRASS).

| | |
|---|---|
| Waldron's pattern, oiled | $8.50 |
| Silver steel, painted | 8.50 |
| Western dutchman, bronzed and painted | 9.00 |
| Clipper, polished web | 9.00 |
| Fine cutlery steel, full polished | 10.00 |
| All steel, full polished | 11.00 |

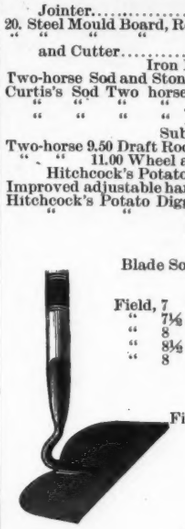
Grain Scythes.

| | |
|---|---|
| Waldron's pattern, oiled | 11.25 |
| Silver steel, painted | 11.25 |
| Clover, oiled | 11.25 |
| Clipper, bronzed and painted | 11.50 |

Lawn Scythes.

| | |
|---|---|
| Clipper, bronzed and painted | 9.0 |

Dis., 40and 10%.



SOWER, BROADCAST SEED.

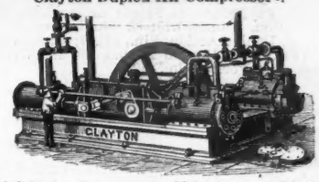
Per dozen..... $30 f.o.b.

Gross wt., 110 pounds per dozen

Net wt., 75 pounds per dozen.

### Air Compressors.

Clayton Duplex Air Compressors.




Special design for export. Shipping weight, 8,000 lbs. No one piece weighing over 300 to 400 lbs. Size No. 3½. Steam cylinders, each 12 in. diameter; air cylinders, each 12 in. diameter, and stroke, 13 in.; capacity, six 3 in. rock drills. Price, $3,000 f.o.b. New York. Dis., 20%.

### Anvils.

Eagle anvils.

| | Weight about | | No. | Weight about | |
|---|---|---|---|---|---|
| No. 000 | ½ lb | $1.00 | No. 4 | 40 lbs | $4.25 |
| " 00 | 4 " | 1.75 | " 5 | 50 " | 5.00 |
| " 0 | 10 " | 2.25 | " 6 | 60 " | 5.50 |
| " 1 | 15 " | 2.75 | " 7 | 70 " | 6.00 |
| " 2 | 20 " | 3.00 | " 8 | 80 " | 7.00 |
| " 3 | 30 " | 3.75 | " 9 | 90 " | 8.00 |

Anvils weighing 100 to 800 lbs., 10 cts. per lb. Discount 15 and 10 %.

### Arms and Ammunition.

| | Wood Powder. Kegs, 25 lbs. | ¼ kegs. ½ keg. | 6¼ lbs. | 1 cans |
|---|---|---|---|---|
| Trap for first quality arms only | $19.50 | 9.85 trap. 8.60 let'd grades. | 5.00 | .85 |
| A, for large bore<br>C, for general use<br>D, fine for small bore and rifles<br>E, very fine for small bore rifles and gallery shooting | 17.00 | | 4.35 | .75 |

Dis., 20-5 and 5%

| | | Discount. Per cent. |
|---|---|---|
| Bullet Breech Caps | per lb. 1.60 | 10 |
| Conical Bullet Caps | " 1.75 | 10 |
| | | Discount. Per cent. |
| Rim Fire Cartridges | | 60 10 |
| Military Rim Fire Cartridges | | 15 10 |
| Central Fire Pistol and Rifle Cartridges | | 40 10 |
| Central Fire Metallic Cartridges for Target and Sporting Rifles | | 30 10 |
| Military Cartridges, Central Fire | | 30 10 |
| Lefaucheux Cartridges | | 60 |

| | | Special |
|---|---|---|
| Gatling Cartridges | | |
| Primed Shells and Bullets | 25 | 10 |
| Friction Cannon Primers | 20 | 10 |
| Primers | | 10 |
| Percussion Caps, F. C | per M. 33c. | |
| U. M. C | " 42½c. | |
| Musket | " 45c. | |
| Brass Shot Shells, U. M. C., 1st qual | 60 | 10 |
| Club brand | 65 | 10 |

Paper Shot Shells.

14, 16 and 20 ga. First quality, 30, 10 and 10 per cent; 4, 8, 10 and 12 ga., First quality, 25, 10 and 10 per cent.
14, 16 and 20 ga. Club brand, 30, 10 and 10 per cent.
10 and 12 ga. Club brand, 33⅓, 10 and 10 per cent.
Gun Wads, 20 and 10 per cent.

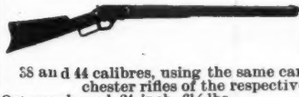
### RIFLES.

Colts' Lightning Magazine.

| | | Discount 10 p | cent |
|---|---|---|---|
| 40/60 and 45/60 calibre octagon barrel | 10 lbs. | | $15.38 |
| " " " " round | ... 9¾ | " | 14.25 |
| " " " " carbine | ... 9 | " | 14.25 |
| 32, 38, and 44 calibres, octagon | ... 7¼ | " | 13.50 |
| " " " " round | ... 6¾ | " | 12.38 |
| " " " " carbine | ... 6¼ | " | 12.38 |
| " " " " baby carbine | ... 5¼ | " | 12.38 |
| 22 calibre, rim fire, octagon barrel | | | 15.38 |
| " " " round | | | 14.25 |

Remington Light (Baby) carbines. 44 cal., blue, $8; nick. $8 50. Dis., 5%.

### MARLIN RIFLE. MODEL, 1889.



The best in the market, embodying all latest improvements.

38 and 44 calibres, using the same cartridges as Winchester rifles of the respective sizes.

| | | | | |
|---|---|---|---|---|
| Octagon barrel, | 24 | inch, | 6½ | lbs. ... $19.50 |
| " " | 26 | " | 6¾ | " ... 21.50 |
| " " | 28 | " | 7 | " ... 23.50 |
| Round " | 24 | " | 6½ | " ... 18.50 |
| Carbine | 20 | " | 5½ | " ... 17.50 |

Discount, 25, 10 and 10%.

### REVOLVERS.

S & W.

32, Single Action 3, 3¼ in., $8.00.
32, Double Action, 3, 3½ in., $9.35.
32, Safety Hammerless, 3, 3½ in., $ 00.

38, Single Action, 3¼ in., $9.40; 38, Single Action 4 in., $9.65; 38, Single Action, 5 in., $10.00; 38, Double Action, 3¼ in., $10.40; 38, Double Action, 4 in., $10.65; 38, Double Action, 5 in., $11.00; 38, Safety Hammerless, 3¼ in.,

$12 00; 38, Safety Hammerless, 4 in., $12.25; 38, Safety Hammerless, 5 in., $12.50; 44, Single Action, 4 in., $11.50; 44, Single Action, 5 in.. $11.75; 44, Single Action, 6, 6½ in $12.00; 44, Double Action, 4 in., $12.50; 44, Double Action, 5 in., $12.75; 44, Double Action, 6½ in., $13.00; 44, D uble Action Favorite, 5 in., $12.75.

Colts.

Discount, 10 per cent from following prices.

Double Action Army, 44 and 45 calibre, 4¾, 5½, 7½ nch bbl., $13.00.
Double Action, 41 calibre, 2½ to 6 inch bbl., $11.20.
" " 38 " 2½ to 6 " " $10.00.
Single " Army, 45 calibre, 4¾, 5½, and 7½ inch bbl., $12.00.
Single Action Army, 44 calibre, "Frontier," 4¾, 5½, and 7½ inch bbl., $12.00.
New Line 32, $4.00.
" " 30, 2.00.
" " 22, half or full plate, 2.10.
Old Model, 22 calibre, by the hundred, half or full plate, $1.50.
Colt Deringer. 41 calibre, per pair half or full plate, 5.50.
National Deringers, 41 calibre, per pair, half or full plate, $4.00.
New Police, 38,4½ in., nickeled, $6.66.

American Bull Dog

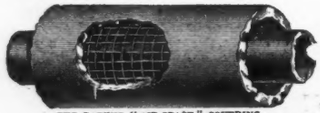
Double Action 32, 38 and 44 calibre, 2½ inch barrel, $1.60; Double Action 32, 38 and 44 calibre, 4½ inch barrel, $1.85; Double Action 32, 38 and 44 calibre, 6 inch barrel, $2.10 net.

F. & W. British Bull Dog revolvers, 32 and 38 calibre 2½ inch bbl., $1.85 net.
F. & W. Automatic revolver, 32 and 38 calibre, 3¼ inch bbl. $4.00 net.
H. & R. Automatic revolver, 32 and 38 calibre, 3¼ inch bbl., $3.75 net.

Net.

Defender revolvers, Single Action, 22, wood handle, 65.
" " " " 22, rubber " 70.
" " " " 32, wood " 85.
" " " " 32, rubber " 90.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 5¾ inch barrel, $6.50.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 7½ inch barrel, $6.00.
Remin gton Double Deringers, 41 cal., rim fire, $4.05.

## Asbestos Goods.

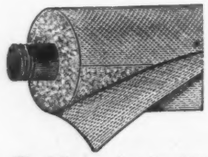


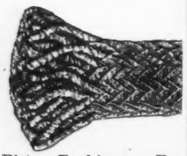
THE PATENT "AIR-SPACE" COVERING.

Patent air-space coverings. Per sq. ft., 25c. Discount, 20%.

Wick packing, per pound, 45c. Discount, 10%.

Removable pipe coverings. } See list. Sq. ft. 20c. Disc., 25%.





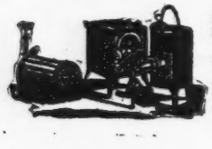
Fire felt covering for steam pipes. Per sq. ft., 25c. See list. Discount, 25%.

Piston Packing. Per pound, 45c. Discount, 10%.

| | | | | |
|---|---|---|---|---|
| Asbestos Fibre for filtering | per | lb. | 40c. | disc 20% |
| " Cord 95c., and Sewing Twine, $1.35 | | | | |
| Asbestos cloth, 36 inches wide | per | yard | 2.25 | " 10% |
| " cement for boilers | per | bbl. | 3.25 | " 10% |
| " sheathing | per | lb. | .12½ | " 10% |
| " building felt | " | " | .10½ | " 10% |
| " hair felt for hot and cold water pipes | per sq. ft. | | See spec. list. | |
| Asbestos mill board | per | lb. | .12½ | " 10% |
| " soldering blocks | per | doz. | See list. | |

## Assay Furnace.

Hydro-Carbon Blow-Pipe Assay Furnace.



No. 2, Muffle Furnace taking C Battersea Muffle 8x4¾x3 in.....$10.00
No. 3, taking F Muffle, 10x6x4 in..... 15.00
No. 1, Crucible Furnace, taking Battersea, U or Colorado B Crucible, 4 in. dia. 5½ deep.. 4.00
No. 2 taking Batter-

As E, round. 5 in. dia.. 6'4 deep..... $5.00
Blow-Pipe No. 2, with half gallon tank, made entirely of seamless brass..... 23.00
Blow-Pipe No. 3, with one gallon tank, otherwise same as No. 2..... 26.00
Blow-Pipe No. 2, Muffle Furnace No. 2, and Crucible Furnace No. 1..... 37.00
Blow-Pipe No. 3, Muffle Furnace No. 3, and Crucible Furnace No. 2..... 46.00
25% f. o. b. New York on wholesale orders.

## Axes, etc.

Axes, Handled.

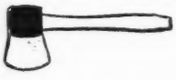
| Brands, | Collins. doz. | Sharp. doz. | Pecks. doz. |
|---|---|---|---|
| Dis., % | 10 | 35 | Net |
| 3½@4½ lbs | $10.75 | $15.00 | 9.50 |
| 4½@5¼ lbs | 11.00 | 15.50 | 9.50 |
| 4¼@6 lbs | 11.50 | 16.00 | 10.00 |
| 5@7 lbs | 12.50 | 17.50 | 11.00 |

| Brands, | Hurd. doz. Net | American Ideal. doz. Net | Blair. doz. Net. | Freeman. doz. Net |
|---|---|---|---|---|
| 3½@4½ lbs. | $8.50 | $11.00 | $8.00 | $6.50 |
| 4¼@5¼ lbs. | 8.50 | 11.00 | 8.00 | 7.00 |
| 4½@6 lbs... | 8.75 | 11.25 | 8.25 | 7.00 |
| 5@7 lbs..... | 9.00 | 11.50 | 8.50 | 7.50 |

| Brands, | Collins. doz. | Sharp. doz. | Pecks. doz. |
|---|---|---|---|
| Dis., % | 10 | 50 | 50 & 5 |
| Three-quarter axe.... | $8.00 | $13.50 | $13.50 |
| Boys' axe, No. 2..... | 8.00 | 13.50 | 13.50 |
| Half axe..... | 7.00 | 12.50 | 13.00 |
| Quarter axe..... | 6.50 | 10.00 | 11.00 |

| Brands, | Collins. doz. | Hurd. doz. | Freeman. doz. |
|---|---|---|---|
| Dis., % | 60 5 | 50 5 | 25 |
| Three-quarter axe..... | $13.50 | $13.50 | $7.50 |
| Boys' axe, No. 2 ..... | 13.50 | 13.50 | 7.50 |
| Half axe ..... | 12.50 | 12.50 | 6.50 |
| Quarter axe ..... | 12.00 | 12.00 | 6.00 |

Hatchets, with handles.



AXE PATTERN. HUNTER'S.
Both patterns, same price.

| | Collins. | Sharp. | Pecks. | Simmons. |
|---|---|---|---|---|
| Dis., % | 10 | 50 | 50 & 5 | 50 |
| Dozen..... | $6.00 | $10.00 | $9.00 | $9.00 |

SHINGLING. CLAW.
Shingling.

| Brands, | Collins. | Sharp. | Pecks. | Mann |
|---|---|---|---|---|
| Dis., % | 10 | 50.5 | 50 & 5. | 50.5 |
| No. 1 Doz..... | $4.75 | $8.00 | $8.00 | $8.00 |
| No. 2 " ..... | 5.25 | 8.50 | 8.50 | 8.50 |
| No. 3 " ..... | 5,75 | 9.00 | 9.00 | 9.00 |

Claw.

| Brands. | Collins. | Sharp. | Blair. | Mann |
|---|---|---|---|---|
| Dis., % | 10 | 50, 5 | 60, 5 | 50, 5 |
| No 1. Doz..... | $5.25 | $9.00 | $9.00 | $9.00 |
| No. 2. " ..... | 5.75 | 9.50 | 9.50 | 9.50 |
| No. 3. " ..... | 6.25 | 10.00 | 10.00 | 10.00 |

LATHING. BROAD.
Lathing.

| Brands. | Collins. | Sharp. | Pecks. | Blair. |
|---|---|---|---|---|
| Dis., % | 10 | 50, 5 | 50 & 5 | 60, 5 |
| No. 1. Doz..... | $4.75 | $6.75 | $8.00 | $8.00 |
| No. 2. " ..... | 5.25 | 7.50 | 8.50 | 8.50 |
| No. 3. " ..... | 5.75 | 8.25 | 9.00 | 9.00 |

Broad.

| Brands. | Collins. | Sharp. | Pecks. | Blair. |
|---|---|---|---|---|
| Dis., % | 10 | 50 | 50 | 60, 5 |
| No. 2. Doz..... | | $11.50 | $11.00 | $11.50 |
| No. 3. " ..... | 7.50 | 13.00 | 13.00 | 13.00 |
| No. 4. " ..... | 8.00 | 14.50 | 14.50 | 14.50 |
| No. 5. " ..... | 9.00 | 16.50 | 16.50 | 16.50 |
| No. 6. " ..... | 10.00 | 18.00 | 18.00 | 18.00 |

Broad Axes. Steel polls.

| Brands. | Collins. | Hunt. | Sharp. | Pecks. |
|---|---|---|---|---|
| Dis., % | 10 | 45 | 50 | 50 & 5 |
| Dozen.... | $20.00 | $30.00 | $29.00 | $32.00 |

YANKEE, OR OHIO. PENNSYLVANIA. NEW ORLEANS.

| Brands. | Collins. | Sharp. | Pecks. | Blair. | Mann. |
|---|---|---|---|---|---|
| Dis., % | 10 | 50 | 50 & 5 | 60, 10 | 50 |
| Dozen..... | $19.00 | $32.00 | $32.00 | $32.00 | $32.00 |

Handled, extra, $4.

Adzes.

| RAILROAD. Brands. | SQUARE HEAD. Collins. | Hunt. | Sharp. | SHIP CARPENTER'S Pecks. | Hurd |
|---|---|---|---|---|---|
| Dis., % | 10 | 45 | 50 | 50 | 50, 50 |
| Railr d, heavy, doz. | $14.00 | $26.00 | $26.00 | $26.00 | $26.00 |
| Flat head " | 15.00 | 24.00 | 24.00 | 24.00 | 24.00 |

| Brands. | Collins. | Hunt. | Sharp. | Pecks. | Hurd. |
|---|---|---|---|---|---|
| Dis., % | 10 | 45 | 50 | 50 | 50, 100 |
| Square head, doz. | $12.50 | $24.00 | $24.00 | $24.00 | $24.00 |

| Brands. | Collins. | Hunt. | Sharp. | Pecks. |
|---|---|---|---|---|
| Dis., % | 10 | 45 | 50 | 50 |
| Ship Carpenter's or Spur Head, doz. | $13.00 | $25.00 | $25.00 | $25.00 |

| Brands. | Collins. | Hunt. | Sharp. |
|---|---|---|---|
| Dis., % | 10 | 45 | 50 |
| Cooper's, handled and bolted, doz.. | $16.00 | $27.00 | $25.00 |

## Axle Grease.

Frazer's (2-lb. tins), per gross..... $18.00
2-lb. wooden boxes, " ..... 12.00
Discount, 25 and 5 %.
Dixon's Everlasting, boxes 1 lb., per doz..... $1.20
" " " 2 lbs., " ..... 2.00

See Oils, page 10.

## Bellows.

Miner's Bellows 24 in., $8.50; 26 in., $9.75; 28 in., $11.00; 30 in. $11.25; 32 in., $13.50.
60 and 5% dis.
Standard, each: 28 to 24 in., $10; 28 in., $12; 32 in., $14; 34 in. $16; 36 in., $18; 38 in., $20; 40 in., $23; 42 in., $27; 44 in., $32
60 and 5% dis.
Hand Bellows, per doz.: 6 in., plain, $10; fancy, $20; 7 in., plain, $12; fancy, $24; 8 in., plain, $14; fancy, $28; 9 in. plain, $16; fancy, $32; 10 in. plain, $18; fancy, $36.
50% dis.

## Belting.

LEATHER BELTS.
Standard Manufacturers List.
Single belts per foot.

| Width. | | Width. | | Width. | |
|---|---|---|---|---|---|
| 1 inch | 10 | 6 inch | .76 | 20 inch | 2.84 |
| 1¼ " | 13 | 7 " | .90 | 21 " | 3.02 |
| 1½ " | 17 | 8 " | 1.02 | 22 " | 3.20 |
| 1¾ " | 20 | 9 " | 1.15 | 23 " | 3.37 |
| 2 " | 23 | 10 " | 1.29 | 24 " | 3.54 |
| 2¼ " | 26 | 11 " | 1.42 | 26 " | 3.92 |
| 2½ " | 30 | 12 " | 1.55 | 28 " | 4.30 |
| 2¾ " | 33 | 13 " | 1.68 | 30 " | 4.64 |
| 3 " | 36 | 14 " | 1.82 | 32 " | 5.00 |
| 3½ " | 43 | 15 " | 1.98 | 34 " | 5.35 |
| 4 " | 50 | 16 " | 2.14 | 36 " | 5.70 |
| 4½ " | 56 | 17 " | 2.31 | 40 " | 6.40 |
| 5 " | 63 | 18 " | 2.49 | 44 " | 7.10 |
| 5½ " | 70 | 19 " | 2.66 | 48 " | 7.80 |

Double belts twice the price of single.
Dis. single and double belts, cemented, 50 and 5%.
Dis. single and double belts, riveted and cemented, 50 and 5%.
Dis. single belts, cemented and lacesewn, waterproofed, 50%.
Dis. double belts, cemented and lacesewn, waterproofed, 45%.

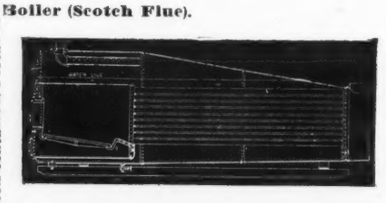
## Blowers and Disc Fans.

| | | | |
|---|---|---|---|
| 12 inches..... | $30 | 12 inches ..... | $1 |
| 18 " ..... | 40 | 48 " ..... | 125 |
| 24 " ..... | 50 | 54 " ..... | 160 |
| 30 " ..... | 65 | 60 " ..... | 200 |
| 36 " ..... | 85 | | |

Discount 35% and 2½ for cash.

## Boiler (Scotch Flue).

Self-contained. Portable.



Economical. Durable.

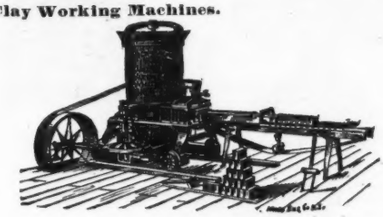
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Horse power | 8 | 10 | 15 | 20 | 25 | 30 | 35 |
| Diameter | 28" | 32" | 32" | 36" | 40" | 40" | 44" |
| Length, feet | 9½ | 10 | 12½ | 13¼ | 14¾ | 16¼ | 16¾ |
| Weight, pounds | 3500 | 4000 | 4500 | 5 00 | 6500 | 6900 | 7500 |
| Price, $ | .... | .... | 387 | 487 | 580 | 634 | 767 |
| Horse power | 40 | 45 | 50 | 55 | 60 | 70 | 80 |
| Diameter, inches | 44 | 48 | 48 | 52 | 52 | 56 | 56 |
| Length, feet | 17½ | 16½ | 18 | 17½ | 18½ | 18 | 19 |
| Weight, pounds | 8000 | 8500 | 8800 | 9500 | 10,000 | 11,000 | 12,00 |
| Price, $ | 827 | 920 | 1027 | 1147 | 1227 | 1387 | 1500 |

Discount 15%.

## Brick Machinery.

| | |
|---|---|
| Heavy Steam Power Machine | $525.00 |
| Horse-Power Machines | 300.00 |
| Additional Horizontal Pugmill | 22 |
| Brick Moulds | $2.50 to $3.00 |
| Brick Trucks | 5.00 to 13.50 |
| Brick Barrows | 7.25 |
| Brick Barrows with Springs | 8.20 |
| Sand Barrows, steel tray | 6.40 |

## Clay Working Machines.



| | Capacity. | Price. |
|---|---|---|
| No. 20 A brick machine | 60,000 to 80M | $3,500 |
| No. 20 B " " | 50,000 | 2,500 |
| No. 15 D " " | 40,000 | 1,800 |
| No. 10 D " " | 40,000 | 1,500 |
| No. 15 S " " | 30,000 | 1,400 |
| No. 10 S " " | 25,000 | 1,200 |
| Upright stock brick machine | 25,000 to 30M | 1,200 |
| No. 7 S brick machine | 20,000 | 650 |
| No. 6 S " " | 15,000 | 575 |
| No. 2 E " " H. P. | 5,000 to 8,000 | 400 |

## Brushes.

PAINT BRUSHES.

Intermediate prices not quoted.
Prices per dozen.

| | No. 6. | 4. | 2. | 0. | 3-0. | 5-0. | 7-0. | Dis |
|---|---|---|---|---|---|---|---|---|
| X | $1.15 | $1.80 | $2.50 | $3.15 | $4.00 | $5.25 | $6.75 | 25% |
| Atlantic | 1.25 | 2.15 | 3.80 | 5.25 | 7.00 | 10.00 | 13.00 | 25% |
| Standard | 1.60 | 2.60 | 4.00 | 6.00 | 8.00 | 11.00 | 16.00 | 25% |

VARNISH OVAL.

| | No. 6. | 4. | 2. | 0. | 3-0. | 5-0. | 7-0. | Dis. |
|---|---|---|---|---|---|---|---|---|
| Globe | $1.15 | $1.80 | $2.50 | $3.25 | $4.60 | $6.00 | $8.00 | 25% |
| Crown | 1.25 | 2.00 | 2.75 | 4.00 | 5.25 | 7.00 | 10.00 | 25% |

VARNISH FLAT.

| | No. 1. | 1½. | 2. | 2½. | 3. | Dis. |
|---|---|---|---|---|---|---|
| X | $0.48 | $0.72 | $0.96 | $1.20 | $1.40 | 25% |

SASH BRUSH.

| | No. 1. | 3. | 5. | 7. | 9. | Dis. |
|---|---|---|---|---|---|---|
| X | $0.25 | $0.40 | $0.60 | $0.85 | $1.20 | 25% |
| XX | 0.40 | 0.75 | 1.10 | 1.40 | 2.00 | 25% |

WHITE-WASH.

| | No. 6. | 7. | 8. | Dis |
|---|---|---|---|---|
| Brown | $1.25 | $1.60 | $2.00 | 25% |
| Pure | 2.40 | 4.00 | 6.00 | 25% |

SHOE

Per gross.

| 8. | 9. | 25. | 15. | 26. | Dis. |
|---|---|---|---|---|---|
| 10 | $11.50 | $12.50 | $15 | $18 | 25% |

Per gross dis., 25%.

| 27. | 32. | 29. | 35. |
|---|---|---|---|
| $20.00 | $24.00 | $28.00 | $30.00 |

HORSE.

Patent.

Per gross, dis., 25%.

| | | | |
|---|---|---|---|
| $18.00 | $20.00 | $24.00 | $30.00 |

Per gross, dis., 25%.

| | | | | |
|---|---|---|---|---|
| Wood back | $12 | $16 | $18 | $24 |

Per gross, dis., 25%.

| | | | |
|---|---|---|---|
| Leather back. | $24 | $31.50 | $42 | $54 |

SCRUB.

Patent.

Per gross, dis., 25%.

| | |
|---|---|
| $12.00 | $16.00 | $18.00 |

Per gross, dis., 25%.

| | | | | |
|---|---|---|---|---|
| $6.50 | $8.50 | $12 | $14 | $18 |

SHAVING.

Per doz., dis., 25%,

| | | | | |
|---|---|---|---|---|
| $0.36 | $0.60 | $1.00 | $1.50 | $2.50 |

COUNTER.

Per doz., dis., 25%.

| | | |
|---|---|---|
| $3.00 | $4.00 | $5.00 |

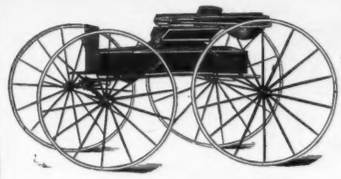
## Carriages, Etc.

Windsor Surrey.

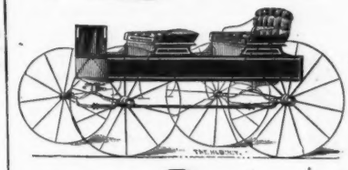
Open, $120.
Canopy top, $145.
Leather extension top, $185.
Pole or shafts.

Cut under Surrey.

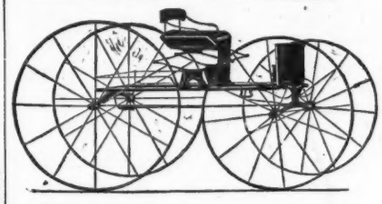
Canopy top, $185.
Leather extension top, $220.



Brewster Spring.
Open, $55.
Rubber top, $76.
Leather top, $100.



Runabout, $65.



Buckboard. $60; shafts.

No. 0. Cart, top and fenders. $150
No. 1. Cart, top and fenders. 90
No. 2. Cart, one man cart, open. 65
No. 2. Cart, one man, top. 86
No. 2. Cart, one man, top and fenders. 90
No. 3-H. Cart, two man, open. 54
No 4. Cart, two man, top. 86
No. 5. Cart, two man, top and fenders. 90
No. 6. Cart, two men, top and fenders. 96
No. 7. Two man combination cart. 110
Wide track 5 feet.
Narrow track 4 feet 8 inches.
Discount 33⅓ per cent. off.

## Crucibles.

Battersea Crucibles, Triangular.

| No. | Height. Inches. | Width. Inches. | Crucibles. Per doz. | Covers. Per doz. |
|---|---|---|---|---|
| S | 4½ | 4½ | $1.00 | $0.50 |
| T | 4 | 3¾ | 0.80 | 0.50 |
| U | 3½ | 3¼ | 0.60 | 0.40 |
| V | 3¼ | 2⅞ | 0.45 | 0.40 |
| W | 2⅞ | 2⅝ | 0.35 | 0.30 |
| X | 2½ | 2¼ | 0.30 | 0.30 |
| Y | 2⅛ | 2⅛ | 0.25 | 0.30 |
| Z | 1¾ | 1¾ | 0.20 | 0.30 |

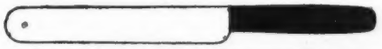
Battersea Muffles, any size, made to order.
See Illustration in advertisement.

| No. | Long. Inches. | Wide. Inches. | High. Inches. | Price. Each. |
|---|---|---|---|---|
| A | 7 | 3½ | 2½ | $ .6 |
| B | 7½ | 4⅜ | 2⅞ | .7 |
| C | 8 | 4¾ | 3 | .85 |
| D | 8½ | 5 | 3¼ | 1.00 |
| E | 9 | 5½ | 3⅝ | 1.1 |
| F | 10 | 6 | 4 | 1.2 |
| G | 11 | 4 | 3½ | 1.0 |
| H | 10½ | 5¼ | 3⅞ | 1.0 |
| J | 12 | 6 | 4 | 1.25 |
| K | 14 | 8 | 5 | 1.72 |
| L | 15 | 9 | 6 | 2.00 |

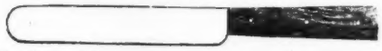
Export discount 15 %.

## Cutlery.

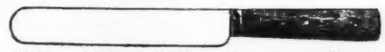
KNIVES—TABLE.



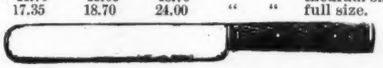
Japanned iron handles, $10.70 per gross pairs.



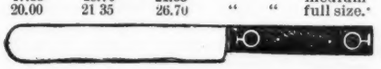
| Cocobola handles. | Ebony handles. | Bone handles. | |
|---|---|---|---|
| 10.70 | 12.00 | 15.35 | gross pairs. |



| | | | |
|---|---|---|---|
| 14.70 | 16.00 | 18.70 | " " medium size. |
| 17.35 | 18.70 | 24.00 | " " full size. |



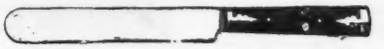
| | | | |
|---|---|---|---|
| 17.35 | 18.70 | 21.35 | " " medium |
| 20.00 | 21 35 | 26.70 | " " full size. |



| | | |
|---|---|---|
| 22.70 | 24.00 | 29.35 " |

| Cocobola handles. | Ebony handles. | Bone handles. | |
|---|---|---|---|
| 27.35 | 28.70 | 36.00 | |
| | | | gross pairs. |

| | | |
|---|---|---|
| 28.00 | 29.35 | 38.00 " " |



| | | | |
|---|---|---|---|
| 28.65 | 30.00 | 38.00 | " |

| | | |
|---|---|---|
| 28.65 | 30.00 | 38.00 |

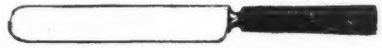
| | | | |
|---|---|---|---|
| 32.00 | 33.35 | 38.00 | " " |

| | | | |
|---|---|---|---|
| 34.70 | 38.00 | 48.00 | " " |

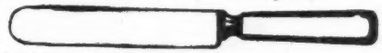
| | | | |
|---|---|---|---|
| 33.35 | 34.70 | 46.70 | Gross pairs. |

| | | | |
|---|---|---|---|
| 37.35 | 38.70 | 50.70 | " " |

| | | | |
|---|---|---|---|
| 40.00 | 41.35 | 52.35 | " " |



Hard rubber handles, 5.75 per dozen pairs.

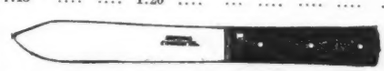


Solid bone handles, 4.80 per dozen pairs.

Celluloid handles, 7.35 per dozen pairs.
Forks are made to match all above patterns, with either three or four prongs.
Discount 25 %.

BUTCHERS'—COCOBOLA HANDLES.

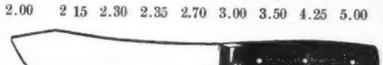
| | Per dozen. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Land | 5 | 5½ | 6 | 6½ | 7 | 8 | 9 | 10 |
| 4½ in | in. | in. | in. | in. | in. | in. | in. | in. |
| 1.15 | .... | .... | 1.20 | .... | .... | .... | .... | .... |



| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.15 | 1.20 | 1.30 | 1.40 | 1.70 | 1.90 | 2.35 | 3.00 | 3.75 | 5.00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| .... | 1.45 | 1.60 | 1.70 | 2.00 | 2.35 | 2.80 | 3.25 | 4.00 | .... |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2.00 | 2.15 | 2.30 | 2.35 | 2.70 | 3.00 | 3.50 | 4.25 | 5.00 | 7.50 |



| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2.45 | 2.70 | 2.95 | 3.15 | 3.45 | 3.70 | 4.35 | 5.00 | 6.00 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2.10 | 2.20 | 2.35 | 2.50 | 2.80 | 3.40 | 4.35 | 5.30 | 6.85 | .... |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3.40 | 3.55 | 3.70 | 4.10 | 4.60 | 5.30 | 7.00 | 9.00 | 12.00 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| .... | 4.10 | 4.25 | 4.40 | 4.80 | 5.30 | 6.00 | 7.75 | 9.50 | 12.50 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2.00 | 2.15 | 2.30 | 2.35 | 2.70 | 3.00 | 3.50 | .... | .... | .... |

Discount 25 and 10 %.

HUNTING—EBONY HANDLES.

| 5½ in. | 6 in. | 6½ in. | 7 in. | 8 in. | 9 in. |
|---|---|---|---|---|---|
| Per Dozen. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 2.70 | 3.00 | 3.30 | 3.55 | 4.00 | 5.00 |

2.55 2.70 3.00 3.30 3.55 4.00 5.00

Discount, 25 and 10 %.
Per Dozen.

Putty knives, cocobola handles..... ..... $1.30@$1.50

SHEARS.

TAILORS'—JAPANNED OR NICKEL HANDLES.

Per pair.

| | | | |
|---|---|---|---|
| 12 in..... ..... | 6.60 | | |
| 12½ in.... ..... | 7.00 | | |
| 13 in..... ..... | 8.00 | | |
| 13½ in..... | 9.00 | | |
| 14 in..... | 10.00 | | |
| 14½ in..... | 11.00 | | |
| 5 in ..... ..... | 12.00 | 16 in..... | 14.00 |

Discount, japanned, 60 %; nickle, 45 %.

BENT TRIMMERS.

Per dozen.

| | | | |
|---|---|---|---|
| 6 in..... | 13.00 | 10 in..... | 27.00 |
| 7 in ..... | 15.00 | 11 in..... | 30.00 |
| 8 in ..... | 17.00 | 12 in..... | 33.00 |
| 9 in .. | 22.00 | | |

STRAIGHT TRIMMERS.

Per dozen.

| | | | |
|---|---|---|---|
| 6 in..... | 12.00 | 10 in.... . | 25.00 |
| 7 in..... | 14.00 | 11 in..... | 30.00 |
| 8 in..... | 16.00 | 12 in..... | 33.00 |
| 9 in..... | 19.00 | | |

LADIES' SCISSORS.

Per dozen.

| | | | |
|---|---|---|---|
| 4½ in..... | 10.00 | 6 in. ..... | 11.00 |
| 5 in..... | 10.00 | 6½ in..... | 12.00 |
| 5½ in..... | 10.50 | 7 in..... | 13.00 |

PAPER AND BANKERS'.

Per dozen.

| | | | |
|---|---|---|---|
| 9 in...18.00 | | 13 in....36.00 | |
| 10 in...24.00 | | 14 in....42.00 | |
| 11 in...27.00 | | 16 in....54.00 | |
| 12 in. .32.00 | | 18 in ..20.00 | |

BARBERS—Per dozen.

| | | | |
|---|---|---|---|
| 7½ in..... | 15.00 | 9 in..... | 18.00 |
| 8 in..... | 16.00 | 9½ in..... | 20.00 |
| 8½ in ..... | 17.00 | | |

SCISSORS.

BUTTON-HOLE.

5 and 5½in., 14.00 per dozen.

Discount, japanned, 70 and 10 % nickel, 60 and 10 %

PRUNING.

1 B., 9 in., 24 per dozen; 2 B. 8½ in., 21; 3 B., 7¾ in., 19.80.

No. 110, 10 in., $30 per doz

Dis., 40 and 5%.

PRUNING SHEARS FOR LONG HANDLES.

No. 1, $36 per dozen; No. $30 per dozen.
Discount, 40 and 5%.

**Cutters.**

FEED.

| No. of cutter. | No. of knives. | Length in inches of knives. | Length in inches of feed cut. | Price. |
|---|---|---|---|---|
| 1 | 2 | 6¼ | ¼, ¾ and 1¼ | $18.00 |
| 2 | 2 | 7¼ | ¼, ¾ and 1⅛ | 21.00 |
| 2½ | 1 | 7¼ | ⅝, ⅞, 1¼ and 1⅝ | 21.00 |
| 2½ | 2 | 7¼ | ⅝, ⅞, ⅝ and ⅞ | 23 00 |
| 3 | 1 | 8½ | ⅝, ⅞, 1¼ add 1⅝ | 25.00 |
| 3 | 2 | 8½ | ⅝, ⅞, ⅝ and ⅞ | 27.00 |
| 4 | 1 | 10 | ⅝, ⅞, 1¼ and 1⅝ | 30.00 |
| 4 | 2 | 10 | ⅝, ⅞, ⅝ and ⅞ | 33.00 |
| 5 | 2 | 10 | ⅝, ⅞, ⅞ and 1¼ | 35.00 |
| 6 | 2 | 11 | ⅝, ¾, 1¼ and 2 | 45.00 |
| 6½ | 2 | 11 | ⅝, ¾, 1¼ and 2 | 45.00 |
| 7 | 2 | 13 | ⅝, ¾, 1¼ and 2 | 60.00 |
| 7½ | 2 | 13 | ⅝, ¾, 1¼ and 2 | 60.00 |
| 10 | 2 | 16 | ⅝, ¾, 1¼ and 2 | 80.00 |
| 12 | 2 | 20 | ⅝, ¾, 1¼ and 2 | 100.00 |
| 11 | 2 | 11 | ⅝, ¾, 1¼ and 2 | 45.00 |
| 13 | 2 | 13 | ⅝, ¾, 1¼ and 2 | 60.00 |
| 16 | 2 | 16 | ⅝, ¾, 1¼ and 2 | 80.00 |
| 20 | 2 | 20 | ⅝, ¾, 1¼ and 2 | 100.00 |

The knife arbors for all sizes are made of machinery steel. 30 per cent. dis.

VEGETABLE—GALE'S.

| Size. | Weight of Fly Wheel. Pounds. | Will cut per hour. Pounds. | Price |
|---|---|---|---|
| No. 1½ | 20 | 1,500 | $12 |
| No. 2½ | 32 | 1,700 | 15 |
| No. 3½ | 32 | 1,700 | 15 |
| No. 4 | 42 | 2,000 | 18 |
| No. 5 | 50 | 3,000 | 25 |
| No 10 | 65 | 8,000 | 35 |

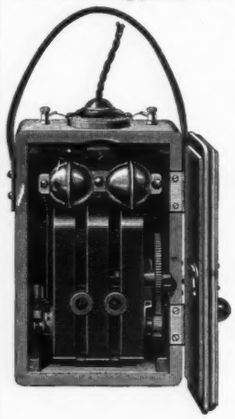
30% dis.

**Drill—Portable Hand Rock.**

Price, $225.

Dis., 25 and 2½%.

**Electrical Appliances.**



20,000 ohm Testing Generator..... $10.00

Pony Magneto Bell..... 6.00

Standard Magneto Bell ..... 7.50

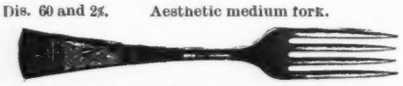
Standard Extension Bell ..... 4.00

Pony Extension Bell..... 3.00

Discount 40 per cent.

| **Electroplate.** | Extra plate, per doz. | Double plate, per doz. | Triple plate, per doz. |
|---|---|---|---|
| Oyster forks..... | 7.00 | 9.00 | 11.00 |
| Sugar shells..... | 9.00 | 11.00 | 13.00 |
| Sugar tongs..... | 25.50 | 31.50 | 37.50 |
| Butter knives, twist or reversed handles..... | 10.50 | 12.50 | 14.50 |
| Nut picks..... | 4.75 | 6.00 | 7.25 |
| Pie knives, engraved blades. | 42.00 | 51.00 | 60.00 |
| Soup ladles..... | 48.00 | 60.00 | 72.00 |

Dis. 60 and 2%. Aesthetic medium fork.



| Tea spoons. | Table spoons. | Medium forks. |
|---|---|---|
| 7.50 | 15.00 | 15.00 per gross. |

Discount, 30 and 5 %.

| | 3 pcs. | 4 pcs. | |
|---|---|---|---|
| Children's sets *on cards*. | | | |
| Leader pattern, as per cut.... | 21.00 | 24.00 doz. | 60 and 5 % |
| Aesthetic pattern, as per cut.. | 5.75 | 7.25 doz. | 30 and 5 % |

SPOONS, FORKS, ETC., BEST PLATE ON HARD WHITE METAL

Tipped Tea Spoon.

Oval Tea Spoon.

Perfect Tea Spoon.

Leader Tea Spoon.

| | Tipd | 5 oz. or extra plate Oval. | Perfect and Leader. |
|---|---|---|---|
| Tea spoons. .... | 4.25 | 4.50 | 4.75 per doz |
| Dessert spoons. | 7.50 | 8.00 | 8.50 " " |
| Table spoons... | 8.50 | 9.00 | 9.50 " " |
| Coffee spoons... | 4.25 | 4.50 | 4.75 " " |
| Dessert forks... | 7.50 | 8.00 | 8.50 " " |
| Medium forks.. | 8.50 | 9.00 | 9.50 " " |

Discount, 60 and 5%.

Spoons and forks, German silver, tipped pattern.

| Tea spoons. | Table spoons. | Medium forks. |
|---|---|---|
| 22.50 | 45.00 | 45.00 per gross. |

Discount, 60 and 2½%.

Spoons and forks, made from brass, and silver plated or a coating of hard, white nickel.

CASTERS.

1,200—Dinner.

Dis., 60 and 5%. 232—Breakfast.

No. 146.

PICKLE DISHES

No. 144. 12 in. high, $3.50
No. 66. 10½ in. high., $2; assorted colored glass.
No. 155. 12 in. high, $4; assorted colored glass.
No. 146. 12½ in. high, $9; hand decorated glass.
No. 156. 12½ in. high, $6; hand decorated glass.

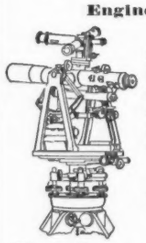
No. 255.

TEA SETS.

No. 255. 6 pieces, $35, quadruple plate.
No. 301. 4 pieces, $23, quadruple plate.
No. 1847. 6 pieces, $42, quadruple plate.

Dis., 60 and 5%.

**Engineering Instruments.**



Full Engineer's Standard Transit.

| | |
|---|---|
| 7 in. graduated circle..... | $255 |
| 6 in. " " ..... | 245 |
| 5 in. " " ..... | 235 |
| 4 in. " " ..... | 225 |
| Standard Engineer's Level, improved centre and seat attachment, 18 in. telescope . ..... | 140 |
| Plain railroad level, 18 in. telescope.... ..... | 200 |

Dis., 5%.

**Explosives.**

| | | | |
|---|---|---|---|
| Dynamite, 75% | Nitro-Glycerine, per lb..... | | .32 |
| " 60% | " " " ..... | | .25 |
| " 40% | " " " ..... | | .20 |
| Blasting powder A, per keg 25 lbs..... | | | $2.40 |
| " " B, " " " ..... | | | 1.90 |
| Sporting powder, standard brands per keg 25 lbs... | | | 5.00 |
| " " " " " | | 12½ lbs. | 2.75 |
| " " " " " | | 6¼ lbs. | 1.50 |
| " " high grades | | " 6¼ lbs. | 3.00 |
| " " " " | | per can 1 lb.... | 60 |
| " " fancy brands | | " 1 lb.... | 1.00 |

Discounts special for quantity.

| | | | |
|---|---|---|---|
| Safety fuse, cotton, 12 M ft. in case..... | | $2.85 | per M ft |
| " " single tape, 6 M ft. in case.... | | 3.85 | " " |
| " " double tape " " .... | | 4.85 | " " |
| " " triple tape " " .... | | 5.60 | " " |

Discount 17½%.

| | | |
|---|---|---|
| Detonating caps, triple force, 25 M. in case.. | $5.00 | per M. |
| " " quintuple force, 25 M. in case..... | 7.50 | per M. |
| Electrical exploders, 4 ft. wires..... ..... | $3.00 | per 100 |
| " " 6 " ..... | 3.54 | " |
| " " 8 " ..... | 4.08 | " |
| " " 10 " ..... | 4.62 | " |

Discount 15%. Long lengths to order.

| | No. | Capacity. | |
|---|---|---|---|
| Magneto Blasting Machines.... | 1 V. | 8 holes | $17.00 |
| " " " .... | 2 V. | 20 " | 25.00 |
| " " " .... | 3 L. | 20 " | 25.00 |
| " " " .... | 3 V. | 30 " | 30.00 |
| " " " .... | 4 V. | 60 " | 50.00 |

Discount 15%.

| | | |
|---|---|---|
| Blasting cables..... ... | $5.00 | each, discount 40% |
| " reels..... | 5.00 | " " 20% |

**Flouring Mill Machinery.**



20-inch New Era Mill for Wheat, Corn, and Middlings.

| Size. Inch. | Power. H. P. | Pulley. Inch. | Capacity Bush. |
|---|---|---|---|
| 20 | 4 to 10 | 14 × 7 | 12 to 40 |

| Speed. | Weight. Lbs. | Price. |
|---|---|---|
| 500 to 800 | 660 | 15 |

Farm and Plantations Mills.

| Diameter of burrs. | Power to drive. | Size of pulley. | Capacity per hour. | Revolutions per minute. | Weight. | Price. |
|---|---|---|---|---|---|---|
| | H. P. | | | | | |
| 14 in. | 2 to 4 | 9×5½ | 4 to 14 bushels | 600 to 1200 | 370 lbs. | $100 |
| 18 in. | 4 to 10 | 11×6½ | 8 to 10 bushels | 400 to 700 | 600 lbs. | 130 |

The Dixey Mill—Stiff Spindle Style.

| Size. | Power. | Capacity. | Weight. | | Pulley. | Iron gear. | Mortise gear. |
|---|---|---|---|---|---|---|---|
| | | | Pulley. | Geared | | | |
| 18 | 4 to 6H.P. | 8 to 25 bu | 560 lbs | 650 | $130 | $165 | |
| 22 | 6 to 8 " | 12 to 30 " | 800 " | 1000 | 165 | 200 | |
| 26 | 8 to12 " | 16 to 40 " | 1100 " | 1500 | 185 | 220 | |
| 30 | 10 to15 " | 25 to 60 " | 1300 " | 1700 | 215 | 255 | |

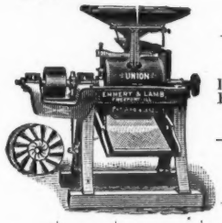
GRINDING MILLS.

"Daisy," without Shaking Bolt, 170 pounds, 9 cubic feet, $40.

"Daisy," with Shaking Bolt, 185 pounds, 9 cubic feet, $48.

} Discount 25 per cent.

"The Union Mill."




| Diameter of Buhr Stones | Size of Pulleys | |
|---|---|---|
| | Diam. | Face. |
| 12 in. | 8 in. | 6¼ in. |
| 16 " | 9 " | 7½ " |

| Horse Power | Capacity in B'sh's | Speed | Without Bolt | With Bolt | Sacking Elevator, Extra | Extra Metal Buhrs |
|---|---|---|---|---|---|---|
| 8 to 10 | 12 to 30 | 1200 to 1500 | $90.00 | $105.00 | $15.00 | $1.20 pair |
| 10 to 15 | 20 to 50 | 1000 to 1600 | 160.00 | 178.00 | 17.50 | 1.50 " |

NOISELESS ROLLER MILLS FOR FLOUR MILL USE.

4-roll or double machines.

| Size, inches. | Weight, lbs. | Price in New York, net. All smooth. | 1 pair smooth, 1 pair corrugated. | All corrugated. |
|---|---|---|---|---|
| 6×12 | 1,480 | $302 | $307 | $312 |
| 6×16 | 1,680 | 334 | 339 | 344 |
| 6×20 | 1,860 | 367 | 372 | 377 |
| 9×14 | 2,800 | 377 | 383 | 390 |
| 9×18 | 3,500 | 406 | 414 | 422 |
| 9×24 | 4,150 | 455 | 466 | 477 |
| 9×30 | 5,850 | 510 | 525 | 539 |

NOISELESS ROLLER MILLS FOR CORN-GRINDING ONLY.

| Size inches. | Weight lbs. | Capacity per hour bushels. | Price in New York |
|---|---|---|---|
| 9×14 | 2,600 | 20 to 35 | $390. |
| 9×18 | 3,050 | 30 " 50 | 422. |
| 9×24 | 3,350 | 40 " 80 | 477. |
| 6×8 Corn Meal Roller Mill | | | $85. |

COMPLETE FLOUR MILLS ON MILLSTONE SYSTEM.

| Size of stone ins. | Power needed. | Capacity flour per hour lbs. | Weight boxed. | Price net in New York |
|---|---|---|---|---|
| 20 | 6 h. p. | 200 | 4,500 lbs. | $550. |
| 26 | 7 " | 250 | 4,500 " | 650. |
| 30 | 10 " | 300 | 5,500 " | 750. |
| 36 | 11 " | 375 | 6,500 " | 850. |
| 42 | 12 " | 450 | 8,000 " | 950. |

COMPLETE FLOUR MILLS ON THE ROLLER PROCESS.

| Capacity in flour 24 hours. | Power needed. | Weight approx. in lbs. | No. of estimate. | Net price in New York. |
|---|---|---|---|---|
| 25 bbls. | 20 h. p. | 14,000 | 15 | $2,200 |
| 40 " | 22 " | 22,000 | D | 2,400 |
| 50 " | 25 " | 32,000 | C | 3,200 |
| 75 " | 35 " | 48,000 | B | 4,700 |
| 100 " | 45 " | 60,000 | A | 5,500 |

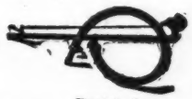
The Nordyke Bradford Portable Mill.

| Size of stones, In. | Grinding capacity. Corn, bu. per hour. | Wheat bu. per hour. | Horse-power. | Weights. Sing'l gear. | Double gear. | Pulley mill. | Geared mills. Iron wh'ls. | Mortise wh'ls. |
|---|---|---|---|---|---|---|---|---|
| 18 | 8 to 10 | ..... | 4 | 550 | 625 | $130 | $165. | $180 |
| 20 | 10 to 12 | ..... | 5 | 600 | 700 | 140 | 175 | 190 |
| 22 | 12 to 15 | ..... | 5 | 700 | 850 | 160 | 190 | 210 |
| 24 | 15 to 18 | ..... | 6 | 900 | 1050 | 175 | 210 | 225 |
| 26 | 18 to 20 | 8 to 10 | 8 | 1200 | 1400 | 185 | 225 | 250 |
| 30 | 20 to 25 | 10 to 12 | 10 | 1500 | 1700 | 225 | 255 | 290 |
| 36 | 25 to 30 | 14 to 17 | 12 | 1800 | 2100 | 315 | 355 | 380 |
| 42 | 35 to 40 | 19 to 21 | 15 | 2000 | 2300 | 390 | 435 | 460 |

| Driving pulley. | Revolutions per minute. | Length of belt above floor. | Approximate shipping weight | Price. |
|---|---|---|---|---|
| 10" × 5¼" | 400 to 500 | 14′ | ..... | $500.00 |
| 14" × 6¼" | 350 to 450 | 18′ | 2600 lb. | 600.00 |
| 14" × 7¼" | 350 to 450 | 18′ | 3050 lb. | 650.00 |
| 14" × 8¼" | 350 to 450 | 18′ | 3350 lb. | 735.00 |

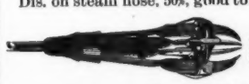
**Flue Cleaner.**

Hurley's Automatic Steam Flue Cleaner.



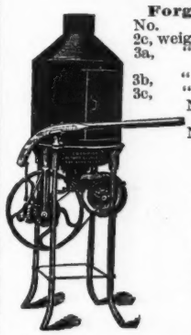
| No. | Outside diam. of tubes. | With hose clamps. | Globe Valves. | Best 4-ply steam hose. Per foot. |
|---|---|---|---|---|
| 1 | 1½ to 2 | $5.00 | ½, 95 cents | ¾, 67 cents. |
| 2 | 2 to 2½ | 6.25 | ½, 95 cents | ¾, 67 cents. |
| 3 | 2½ to 3 | 7.50 | ¾, $1.30 | ¾, 67 cents. |
| 4 | 3 to 3½ | 8.75 | 1, 1.75 | 1¼, 83 cents. |
| 5 | 3½ to 4½ | 10.00 | 1¼ 2.90 | 1¼, $1.04 |

Dis. on flue cleaners, 60 and 10%.
Dis. on steam hose, 50%, good to 90 lbs steam.



Tube cleaner, "The National," Per inch, $1. Discount, 60%.

**Forges (Portable).**



No. 2c, weight, 155 lbs. 21×27 hearth ..$42.00
No. 3a, " 80 " 18 in. diam. hearth..... 27.00
No. 3b, " 75 " 18 " ..... 24.00
No. 3c, " 85 " 18 " ..... 30.00
No. 6a, weight 45 lbs., 14 in. diam. hearth..... 18.00
No. 6B, weight 15 lbs. 14 in. diam. hearth..... 16.00
Dis. 60%.

No. 1, half open hood; height 29 in.; fan, 10 in.; hearth, 21×27 in.; weight, 140 lbs.; price, $40.

No. 2, closed hood; capacity same as No. 1; weight, 150 lbs; price, $12.

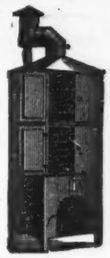
No. 4, half open hood; height, 33 in.; size of hearth, 18 in. diameter; weight, 75 lbs.; price, $27.

Nos. 4 and 5 will produce a welding heat on iron 1½ inches in diameter in five minutes, and do heavier work if required, but on account of size of fire place and general capacity, are specially recommended for use of die sinkers, model and tool makers, plumbers, tinsmiths, jewelers, dentists, locksmiths and small hardware manufacturers, for heating and tempering tools of all kinds.

No. 5, same size and capacity as No. 4; weight, 60 lbs. Price, $24.

Discount on application.

**Fruit Evaporator.**



No. 1. Evaporator..... $30
No. 2. Fruit Drier and Baker, with Bleacher attachment. Weight, 225 lbs. Capacity, 5 to 7 bushels apples per day; 24 in. deep, 26 in. wide, 5½ ft. high; 12 trays, 22×22; 40 square feet drying surface. Complete..... $30
No. 3. Capacity, 15 to 20 bushels per day..... 10
No. 4. Capacity, 20 to 30 bushels per day..... 15
Dis., Nos. 1 and 2 = 25%. Nos. 3-4 = 20%.

Boxing, extra:
No. 1, $5.00; No. 2, $5.00; No. 3, $7.50; No. 4, $12.50.

Freight to New York:
No. 1, $4.00; No. 2, $6.00; No. 3, $1.00; No. 4, $12.00.

**Gaskets.**

Corrugated Copper.

Price, 2 cents per square inch, less 30 per cent. discount for home trade.

Less 60% discount for export trade.

**Glass Tube Cutters.**

One Arm Carries Rotary Cutter Price, $2.50 each.

**Glassware.** Dis. 5%.

6-in. Bowl and cover, per doz.....$2.75
7-in. " " " ..... 3.75
8-in. " " " ..... 5.00
9-in. " " " ..... 7.00
10-in. " " " ..... 9.00

12

13 14 15

13. Nappy, 4½-inch., per doz., 50c.; 6-inch., per doz., $2; 8-inch., per doz., $4.

14. Cream Pitcher, 1 pint, per doz., $1.25; one quart, per doz., $2.75; 3 pints, per doz., $4.00.

15. Pint Pitcher, per doz., $1.50; quart pitcher, per doz. $2; 3 pint pitcher, per doz., $3.00.

16

17

16. Flange Butter and Cover, per doz., $1.50.
17. Water Set, per doz., sets of 60 pieces. $7.50.

18

19 20

21

18. Cheese Dish and Cover, 8 in. per doz., $4.50.
20. Quart Water Bottle, per doz., $4.50.
19. Ind. Salts; per gross, $2.00. Assorted patterns.
21. 4 Bottle Castors, per doz., $6.50; 3 bottle, per doz. $4.50.

22 23 24

22. Berry Dish, 4½-inch, per doz., 50c.; 10-inch, per doz. $4.
23. Butter Dish and Cover, per doz., $1.25.
24. Butter Dish and Cover, per doz., 75c.

25

26 27 28

25. Candlesticks, per doz., $1.75. 26. Glass Slipper and tray for Flowers, per doz., $1. 27. Jam Jar and Cover 1 qt., per doz., $2.50; ½ gal., per doz., $3.25; ¾ gal., per doz., $4; 1 gal., per doz., $5; 1½ gals., $9; 2 gals., per doz., $12. 28. Pocket Flask, 1 pint, $1.

Assd. tumblers, 8 to 9½ oz., per do 25

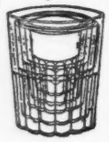
29

9 oz., per doz., $2.50

31

11 oz., assorted patterns, per doz., 25 cts.

30



32

1 oz. to 12 oz., nested for shipping, per doz. nest, $2.

8

9

9. Goblets, banded, per doz., 65 cents; plain, 50c.
9. Claret to match, per doz., 55 cents; plain, 45.
9. Wines, to match, per doz., 50 cents; plain, 35c.
9. Cordials, to match, per doz., 45 cents; ploin, 35c.

No. 10.

Goblets, per doz., 50 cts.
Claret, " 45 "
Wine, " 35 "

No. 8.

Banded, open, hollow stem.

Champagne, per doz., $1.25.

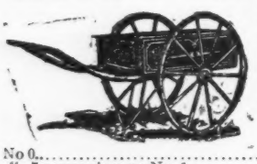
10

11

11. ½ Pt. tumbler, per doz. .50 cts.
½ Pt. mug to match, " .65 "
10. Goblet, " " .50 "

Spoon holder, cream pitcher, sugar cutter dish to match.
Sets of 4 pieces, per doz. sets, 48 pieces, $3.50.

## Hand Carts



No. 0 42 wheel in. tread, 1 in. axle-box 48x28x10 deep, $10.50.
No. 1, 36 wheel, 1 in. tread, ¾ in. axle, box 40x23x10 deep, $9.00.
No. 2, 30 wheel, ¾ in tread, ¾ in. axle, box 32x20x9 deep, $8.25.
With Wagon-Seat Spring.
No. 6, same sizes as

No 0.....$12.00
" 7, same sizes as No. 1.....10.50
" 8, " " " No. 2.....9.75

With Third Wheel, Without Springs.

No. 3, same sizes as No. 0.....$12.00
" 4, " " " No. 1.....10.50
" 5, " " " No. 2.....9.50

## Hardware Specialties.

AUGERS.

Patent Adjustable Hollow. No. 3.

Cuts from ¼ to 1¼, pivoted jaws, graduated scale to 1-16ths, per doz., $60.00.

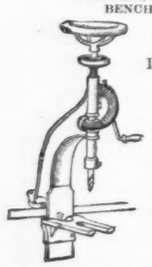
Discount, 15 and 10%.

Patent Hollow Auger. No. 6.

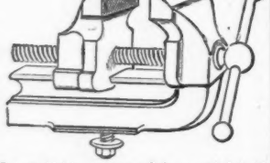
| Inch | 5-16 | ⅜ | 7-16 | ½ |
|---|---|---|---|---|
| With bits | 12.00 | 12.00 | 12.00 | 12.00 |
| Without bits | 8.00 | 8.00 | 8.00 | 8.00 |
| 9-16 | ⅝ | ¾ | ⅞ | 1 |
| | 14.00 | 14.00 | 14.00 | 16.00 | 16.00 | 20.00 |
| | 9.00 | 9.00 | 9.00 | 13.00 | 13.00 | 14.00 |
| 1¼ | 1⅜ | 1½ | | | | |
| 20.00 | 24.00 | 24.00 | | | | |
| 14.00 | 16.00 | 15.00 | | | | |

Discount, 15 and 10%.

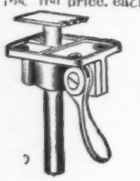
BENCH DRILL.



Adjustable bed plate, 26½ high drills to ½ in. hole, 3½ run of screw.
List price, each.....$10.00
Net, " ..... 4.25

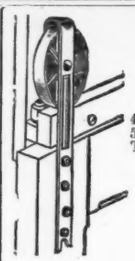


Bench Vise, Steel Jaws, 3½ in., opens 3 in.; weight, 12 lbs. list price, each, $4.00,; net price, each, $1.60.



BENCH HOOK.

Patent, adjustable and reversible
List $9 dozen, ½ dozen in box.
Discount, 30 and 10%.



BARN DOOR HANGER.

4 in., per doz. pairs.....$12.00
5 " " " .....14.40
Track, per foot..... .08
One dozen pairs in case.
Dis., 50 and 10%.

BLACKSMITH'S TONGS.

Swivel Jaw.

No. 1, 16 in., per doz.....$10.00
" 2, 18 " " ..... 10.00
Dis. 20 and 10%.

CASTERS.

Swivel Store Truck

No. 20, japanned, 4 in. wheel, each..... .55
No. 25, " 5 " " " ..... .75

Noiseless turned wheel.

No. 30, japanned, 4 in. wheel, each.... 1.30
No. 35, " 5 " " " ..... 1.60
Discount, 60%.

CLOTHES REEL.

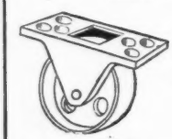
Extra heavy, gray iron, japanned.
List per doz.....$15.00
Net " ..... 7.00

JACK SCREWS.

New pattern wrought iron screw.

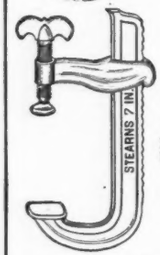
| No. | Rise of screw. | High. | Diameter screw. | Price. |
|---|---|---|---|---|
| 20 | 4½ in. | 10 in. | 2 in. | $4.50 |
| 25 | 6½ " | 12 " | 2 " | 5.25 |
| 30 | 8½ " | 14 " | 2 " | 5.75 |
| 35 | 11½ " | 16 " | 2 " | 6.50 |

Discount. 40%.



Store Truck, stationary.

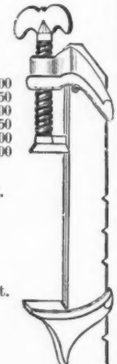
No. 50, 5-inch wheel, 1½ inch wide each, $1.05.
No. 60, 5-inch, extra heavy, 1½ inch wide, each $1.50.
Discount, 25%.



SCREW CLAMPS.

Adjustable.

3 in., per doz.....$4.00
5 " " ..... 6.50
7 " " ..... 9.00
9 " " .....10.50
12 " " .....15.00
16 " " .....20.00

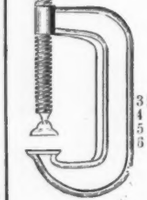


½ doz. in box.
Discount, 20 and 10%.

CLAMPS.

New Door Frame.

3 ft. long, per doz., $8 list; $5 per doz. net.



Malleable Iron Screw Clamps.

| Per Doz. | | Per Doz. | |
|---|---|---|---|
| 3 in | $7.00 | 7 in | $20.00 |
| 4 " | 10.00 | 8 " | 25.00 |
| 5 " | 12.00 | 9 " | 27.50 |
| 6 " | 16.00 | 10 " | 30.00 |

3, 4, 5, 6 in., ½ doz. in box.
Dis., 70%.

WINDOW SCREEN FRAMES.

Patent Japanned Corners.

No. 25, 36 by 36 corners and screws, without bead, per doz., $2.50.
No. 25, 36 by 36 corners and screws, with bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, without bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, with bead, per doz., $3.30.
Black satin stain, sticks ⅞ by 1 in.
Dis., 25, 10 and 5%.

PULLEY HOOK (New Floor.)

Deep cut thread, forged point.

| | Per doz. |
|---|---|
| ¾ in. wrought iron, 8 in. long, list..... | $1.90 |
| net..... | 1.00 |

WELL WHEEL.

New pattern.
Japanned.

| In. | 8 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|
| Pr.d. | 7.00 | 9.50 | 12.50 | 20.00 | 30.00 |

Discount, 70%.

PULLEYS.

Side, No. 45, Japanned.

| Inches... | 1 | 1½ | 2 | 2½ | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| Per doz.. | .90 | 1.00 | 1.60 | 2.40 | 3.50 | 9.00 | 15.00 |

2 inch and under, 2 dozen in box: 2½, 3 and 4, 1 dozen in box; 5 inch, ½ dozen in box.
Discount, 70%.

HAY FORK PULLEY.

New pattern.

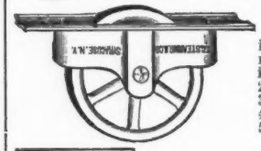
No. 15, 5 in. iron wheel.....per doz. $4.50
25, 5 in. wood " ..... " 4.50
66, 6 in. " " ..... " 6.00

4 dozen in case, 8 dozen in barrel.

No. 15, per dozen, $1.75 net.

SHEAVES.

Patent Common

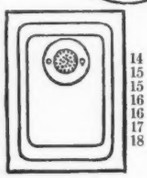


Turned and polished iron wheels, round corners, brass pin, one set in box.

2½ inch.....$1.50
3 " ..... 1.60
4 " ..... 2.00
5 " ..... 2.60
Discount, 60%.

SINKS.

All 6 inch deep.



| | | | |
|---|---|---|---|
| 14 × 20 in.... | $1.50 | 18 × 30 in.... | $2.50 |
| 15 × 25 in.... | 1.75 | 18 × 32 in.... | 3.00 |
| 15 × 27 in.... | 2.00 | 18 × 36 in.... | 3.00 |
| 16 × 24 in.... | 1.80 | 20 × 30 in.... | 3.00 |
| 16 × 28 in.... | 2.10 | 20 × 36 in.... | 3.70 |
| 17 × 30 in.... | 2.25 | 20 × 40 in.... | 4.00 |
| 18 × 24 in.... | 2.10 | | |

Discount, 60 and 10%.

SPOKE POINTERS.

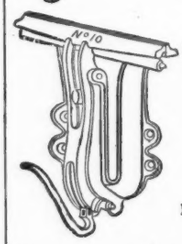
Per doz.
No. 1, points 1⅞ in. diameter, $9.00
No. 2, points 2⅝ in. diameter, $15.00

Discount, 15 and 10%.

½ dozen in box.

VISE.

(Bench Vise, Steel Jaws.)



3½ in. opens 5 in., weight 12 lbs.
List price, each.$4.00
Net " " .. 1.60

Silent Saw Vise.

No. 10., 10 in. jaw, per doz....$15.00
Dis., 33⅓%.

| No. | per dz. | gr., lbs. | No. | per dz. | gr., lbs. |
|---|---|---|---|---|---|
| Amateur vise | $2.25 | 70 | Clamp. 1½ | 3.00 | 80 |
| | | | 2½ | 5.00 | 220 |
| Anvil. | | | 3½ | 14.25 | 700 |
| 2 | 3.75 | 200 | 4½ | 21.00 | 1,425 |
| 3 | 11.25 | 615 | Combination | | |
| 4 | 18.00 | 1,350 | hand | 5.25 | 85 |
| 10 | 24.00 | 1,675 | | | |

Spot cash discount, 33, 20 and 2, f.o.b.

Nos. 1, 1½, 2 and 2½ are packed in dozens; Nos. 3 and 3½ in half dozens; Nos. 4, 4½ and 10 in quarter dozens, and No. 20 singly. Each hand vise is put up in neat box and packed in half dozen lots.

1 Hinge pipe vise, 0 to 2 in. pipe.....Each $10.00
2 " " " 0 to 4 in. pipe..... 20.00
1 Malleable pipe vise, 0 to 2 in. pipe..... 8.00
1 Combination pipe and bench vise, 0 to 2 in. pipe...16.00
Discount, 50%.

WRENCHES.

Coes Wrenches.

BLACK.

Knife Handle.

| Size. | ₱ doz. | Size. | ₱ do | | ₱ doz. |
|---|---|---|---|---|---|
| 6 inch | $9.00 | 10 " | 12.00 | 15 inch | 24.00 |
| 8 " | 10.00 | 12 " | 14.00 | 18 " | 30.00 |
| | | 21 inch | | | 36.00 |

BRIGHT.

Knife Handle.

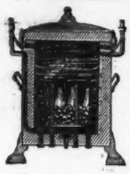
| | | | | | |
|---|---|---|---|---|---|
| 4 inch | $10.00 | 10 inch | 14.00 | 18 inch | 32.00 |
| 6 " | 10.00 | 12 " | 16.00 | 21 " | 38.00 |
| 8 " | 11.00 | 15 " | 26.00 | | |

Discount, 55, 10, 7½ and 3%.

Coes Mechanics' Screw Wrenches, same list, less 50, 10, 10, 7½ and 3%.

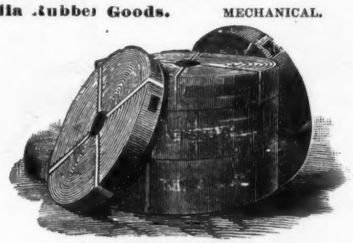
Patent Screw Wrench, same list. Dis, 50, 10, 7½ and 3%.

**Ice Machines (Family).**



No. 1, Ice machine, ice and ice cream molds, 1 lb. ice, $15.00.
No. 2, Ice machine, ice and ice cream molds, 1½ lbs. ice, $20.00.
No. 3, Ice machine, ice and ice cream molds, 1 carafe 1 bottle holder, 2 lbs. ice, $26.50.
No. 4, Ice machine, ice and ice cream molds, 2 carafe 1 bottle holder, 4 lbs. ice, $33.00.
No. 5, Ice machine, ice and ice cream molds, 3 carafe 1 bottle holder, 6 lbs. ice, $40.00.
No. 6, Ice machine, ice and ice cream molds, 4 carafe, 1 bottle holder, 9 lbs. ice, $46.50.
No. 7, Ice machine, ice and ice cream molds, 5 carafe, 1 bottle holder, 12 lbs. ice, $60.00.
Siberia, 18 lbs., $120. Dis., 20 and 10%.

**India Rubber Goods.** MECHANICAL.



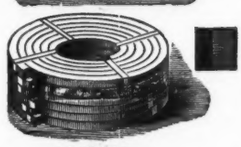
RUBBER BELTING.

| Inches. | 2 ply per foot. | 3 ply per foot. | 4 ply per foot. | 5 ply per foot. | 6 ply per foot. |
|---|---|---|---|---|---|
| 1 | $0.07 | ..... | ..... | ..... | ..... |
| 1¼ | 0.09 | ..... | ..... | ..... | ..... |
| 1½ | 0.11 | ..... | ..... | ..... | ..... |
| 2 | 0.15 | $0.17 | $0.21 | ..... | ..... |
| 2½ | 0.18 | 0.22 | 0.26 | ..... | ..... |
| 3 | 0.22 | 0.26 | 0.31 | ..... | ..... |
| 3½ | 0.26 | 0.30 | 0.37 | ..... | ..... |
| 4 | 0.30 | 0.34 | 0.42 | ..... | ..... |
| 4½ | 0.33 | 0.39 | 0.47 | ..... | ..... |
| 5 | 0.36 | 0.43 | 0.52 | ..... | ..... |
| 6 | 0.43 | 0.52 | 0.62 | ..... | ..... |
| 7 | 0.51 | 0.60 | 0.73 | ..... | ..... |
| 8 | 0.59 | 0.70 | 0.84 | $1.05 | $1.25 |
| 9 | 0.67 | 0.80 | 0.95 | 1.18 | 1.42 |
| 10 | 0.75 | 0.90 | 1.07 | 1.33 | 1.60 |
| 11 | 0.83 | 1.00 | 1.18 | 1.47 | 1.77 |
| 12 | 0.91 | 1.08 | 1.30 | 1.62 | 1.95 |
| 13 | 1.00 | 1.18 | 1.42 | 1.77 | 2.13 |
| 14 | 1.08 | 1.28 | 1.54 | 1.92 | 2.31 |
| 15 | 1.16 | 1.38 | 1.66 | 2.07 | 2.49 |
| 16 | 1.25 | 1.50 | 1.78 | 2.22 | 2.67 |
| 18 | 1.41 | 1.70 | 2.02 | 2.52 | 3.03 |
| 20 | 1.58 | 1.90 | 2.26 | 2.82 | 3.39 |
| 22 | 1.76 | 2.12 | 2.52 | 3.15 | 3.74 |
| 24 | 1.96 | 2.36 | 2.80 | 3.50 | 4.20 |
| 26 | 2.18 | 2.60 | 3.08 | 3.85 | 4.62 |
| 28 | 2.42 | 2.84 | 3.36 | 4.20 | 5.04 |
| 30 | ..... | ..... | 3.64 | 4.55 | 5.46 |
| 32 | ..... | ..... | 3.92 | 4.90 | 5.88 |
| 34 | ..... | ..... | 4.20 | 5.25 | 6.30 |
| 36 | ..... | ..... | 4.48 | 5.60 | 6.72 |
| 38 | ..... | ..... | 4.76 | 5.95 | 7.14 |
| 40 | ..... | ..... | 5.04 | 6.30 | 7.56 |
| 42 | ..... | ..... | 5.32 | 6.65 | 7.98 |
| 44 | ..... | ..... | 5.60 | 7.00 | 8.40 |
| 46 | ..... | ..... | 5.88 | 7.35 | 8.82 |
| 48 | ..... | ..... | 6.16 | 7.70 | 9.24 |
| 50 | ..... | ..... | 6.44 | 8.05 | 9.66 |
| 52 | ..... | ..... | 6.72 | 8.40 | 10.08 |

Dis. Reliance, 60 and 5. Dis. Royal, 60, 10 and 10. Dis Manhattan. 70 and 5. See Leather Belting, page 3; Link Belting, page 9.

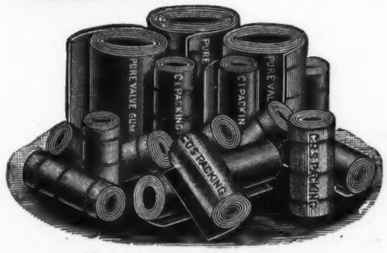
PACKING.

Piston Packing.
Round Piston Packing Per lb. 85c.
Discount, 60, 10 and 5 per cent.



Square Piston Packing.
Price same as above. Round and square piston packing is made in lengths of twelve or twenty-four feet.

Square Piston Packing. Rubber back, per pound $1. Discount 60 per cent. Best only.
Square piston packing rubber back is made in engths of twenty feet.




Steam Packing.
Cloth Insertion, Rubber Outside.
Cloth Insertion, Cloth on one or both sides.

| Thickness. | 1-Ply. | 2-Ply. | 3-Ply. | 4-Ply. |
|---|---|---|---|---|
| 1-64 inch | 70 cts. | ..... | ..... | ..... |
| 1-32 " | 65 cts. | ..... | ..... | ..... |
| 1-16 " | 60 cts. | 63 cts. | 66 cts. | .. .... |
| 3-32 " | 55 cts. | 58 cts. | 61 cts. | ..... |
| 1-8 " | 55 cts. | 55 cts. | 58 cts. | 61 cts. |
| 3-16 " | 55 cts. | 55 cts. | 55 cts. | 58 cts. |
| 1-4 " | 55 cts. | 55 cts. | 55 cts. | 55 cts. |

One-ply of cloth to every 1-16 inch thickness.
Three cents per pound additional will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside, to count as one ply.
All cloth insertion or plain packing is one yard wide, and any length desired.
Wire insertion packing, all thicknesses, per lb, 50 cents.
Discounts: Reliance, 70 & 10; Royal, 60, 10 & 10; Manhattan, 60 per cent.

HOSE.

Improved "Smooth Bore" Rubber Suction Hose.
On spiral flat or round tinned steel wire.

| Int. Diam. | Per ft. |
|---|---|
| 2 inch | $2.60 |
| 2½ " | 3.50 |
| 3 " | 4.00 |
| 3½ " | 5.50 |

| In. Diam. | Per ft. | Per. Diam. | Per ft. |
|---|---|---|---|
| inch | 6.50 | 7 inch | $13.50 |
| 4½ " | 7.50 | 7½ " | 15.00 |
| 5 " | 8.50 | 8 " | 16.50 |
| 5½ " | 9.50 | 9 " | 19.50 |
| 6 " | 10.50 | 10 " | 22.50 |
| 6½ " | 12.00 | 12 " | 27.50 |

Suction hose discount: Reliance, 50 and 10%; Royal, 60, 10 and 5%; Manhattan, 70 and 5%.

SUCTION HOSE.

On spiral brass or iron wire

| Int. Diam. | Per. ft. |
|---|---|
| ¾-inch | $ .77 |
| 1 " | 1.00 |
| 1¼ " | 1.25 |
| 1½ " | 1.65 |
| 1¾ " | 2.10 |
| 2 " | 2.50 |

RUBBER HOSE.
Conducting Hose—Two-ply.

| Int. diam. | Per ft. | Int. diam. | Per ft. | Int. diam. | Per ft. |
|---|---|---|---|---|---|
| ½ in | $0.20 | 2 in | $0.66 | 5 in | $1.65 |
| ¾ in | 25 | 2¼ in | 75 | 6 in | 1.98 |
| 1 in | 33 | 2½ in | 83 | 7 in | 2.31 |
| 1¼ in | 42 | 2¾ in | 92 | 8 in | 2.64 |
| 1½ in | 50 | 3 in | 99 | 9 in | 2.97 |
| 1¾ in | 58 | 4 in | 1.32 | 10 in | 3.33 |

HYDRANT HOSE—THREE-PLY.

| | | | | | |
|---|---|---|---|---|---|
| ½ in | $0.25 | 1½ in | $0.60 | 2½ in | $1.00 |
| ¾ in | 30 | 1¾ in | 70 | 2¾ in | 1.10 |
| 1 in | 40 | 2 in | 80 | 3 in | 1.20 |
| 1¼ in | 60 | 2¼ in | 90 | 3½ in | 1.40 |
| | | | | 4 in | 1.60 |

Discount—Reliance, 60; Royal, 70; Manhattan, 70 and 10 per cent.

GASKETS AND RINGS.

Fibrous.
⅛ inch thick, or less, per lb. $0.90
5-32 inch thick, and upwards, per lb. $0.80
Cloth Insertion.
1-16 inch thick, or less, per lb. $1.25
3-32 inch thick, and upwards. per lb. $1.00
There is one ply of cloth to every 1-16 in thickness.
Five cents per pound additional for each extra ply of cloth. Dis., 60, 10 and 5%.

CORRUGATED RUBBER MATTING.
Rolls 1 yard wide, 30 yards long, cut to any size required.

**Indurated Fibre Ware.**

SPITTOONS.

| | Doz. |
|---|---|
| 16 in. dia., 8 in. high | $24.00 |
| 12½ in. dia., 5½ in. high | 10.80 |
| 9 in. dia., 5 in. high | 7.80 |

WASH TUBS.

| | | | |
|---|---|---|---|
| No. 0, 23 in | ⅛ | 12 | 27.00 |
| No. 1, 21 in | ⅛ | 10½ | 24.00 |
| No. 2, 19½ in | ⅛ | 9 | 21.00 |
| No. 3, 18½ in | ⅛ | 9 | 18.00 |
| Nos. 0, 1, 2 and 3, nested. 1 in | 3½ | | 7.50 |
| Nos. 1, 2, and 3, nested | ½ | 9¾ | 5.25 |

CHAMBER PAILS.
12 in. dia., 9 in. deep, 3 gal. 16.00

WATER COOLERS.

| | Doz. |
|---|---|
| 3 gal | $32.00 |
| 4 " | 40.00 |
| 5 " | 44.00 |
| 6 " | 48.00 |
| 8 " | 64.00 |
| 10 " | 80.00 |
| 12 " | 96.00 |
| 15 " | 120.00 |

Dis. on all 40%

Pails.

| | No. doz. in crate. | Cubic feet. | Price per doz. |
|---|---|---|---|
| Ladies' or Weaver's pails, 6 qt. | 1 | 2¾ | $5.35 |
| Half or buggy pails, 6 qt. | 1 | 3 | 4.8 |
| Star pails (standard plain), 12 qt., stenciled "for fire only" without extra charge. | 1 | 3½ | 5.40 |
| Deck or Mason's pails (same size as Star, but heavier, with heavy wire bail). | 1 | 4 | .60 |
| Railroad or fire pails, 14 qt. (also stenciled "fire" without extra charge). | ½ | 3 | 7.80 |
| Fire pails, round bottoms. | 1 | 4 | 7.80 |
| Milk pails, 14 qt. | 1 | 4 | 7.80 |
| Stable pails, flush bottom, heavy wire bail, 14 qt. | 1 | 4 | 7.80 |
| Stable pails, 16 qt., same as above. | ½ | 3½ | 8.40 |
| " 18 " " | ½ | 3¾ | 10.70 |
| " 20 " " | ½ | 4 | 12.00 |
| Covers for fire or star pails. | | 1 | 3.35 |

KEELERS

| | | | Doz |
|---|---|---|---|
| A—20 in. | 7 in. | deep | 16.20 |
| B—19 " | " | " | 15.00 |
| C—18½ " | " | " | 14.00 |
| 1—17½ " | " | " | 13.20 |
| 2—15½ " | 6 in. | " | 12.00 |
| 3—13½ " | 5 in. | " | 10.20 |
| 4—12 " | 4 in. | " | 9.00 |

MILK OR VEGETABLE PANS.
13½ in. dia 3¼ in. deep, 6 quarts, $3.60 per doz.

WASH BASINS. Doz.
12½ in. $3.60

**Lamps.**

1. Drummond Electric Hanging Lamp, 300 candle power, complete, doz., $42.00.
3. The electric lamp, 60 candle-power. With decorated shades, nickel, per doz. $22.00
With opal plain shades, nickel, per doz. 18.00.
With decorated shades, brass, per doz. 21.00.
With opal plain shades, brass, per doz 17.00.
4. Lamp chimney patent for Sun burners.
Per doz. No. 0, 40 cents. No. 1, 50c. No. 2, 65c.
2. Hitchcock nickel table lamp (No. 654), each $3.25
" " hanging " 656 " 3.50
" " bracket " 651 " 3.50
" " with reflector 653 " 3.75
" French bronze bracket, with reflector, No. 653, each $3.75.

5. Hanging lamp. $12 per doz.
6. Clock night lamp. $21 per doz.
7. Hand lamp. $1.50 per doz.

Miners'.
Brass, Collar and Breast in one piece, Spout and Body in one piece.
Price, $8 per gross net.

Demmler Bros. Doz.
"Cherry" Miners' Lamps, double spout. $2.00
" Drivers' " " " 2.70
" " " single " 2.50
Harp, complete, with square tin shade, per doz., $9.50.
Complete, with Burner and chimney, per doz., $1.50.
Hurricane lanterns 25 cents extra with guards.
875, ⅝ wick, without guards, per doz., $5.00.
876, square safety lifting globe, per doz., $5.50.
877, ⅝ wick, safety lifting globe, per doz., $6.75.
Nickel plated diamond reflector roading lamp, 30 candle-power, $13.50 per doz
Net
Illuminated night clock, $27, per doz.

PAPER LAMPS.

Lined with oil proof composition.

No. 0. Height, 2½ in., per doz... $1.00
No. 1. " 3 " .... 85
No. 2. " 3¾ " .... 1.25
No. 3. " 5 " .... 1.50
No. 4. " 6½ " .... 1.75

33

**Laundry Ap**

Washing Machine.

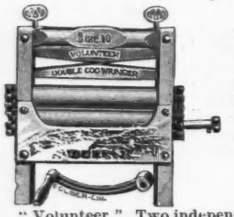
THE CATARACT.

All Metal.

Cubic Measurement 15 ft.

Price $20.

Dis., 25%.



Rolls.

"Volunteer." Length, 10 in.x1¾ in. dia. $40 doz.

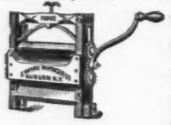
"Volunteer." Length 11 in.x1¾ in. dia. $50 per doz.

"Volunteer." Length 12 in.x1¾ in. dia. $60 per doz. Dis., 40%.

"Volunteer." Two independent pressure screws,

"Daisy." Length, 10 in.x1¾ in. dia. $30 per doz.

"Daisy." Length, 12 in.x1¾ in. dia. $18 per doz. Dis., 40%.



"Empire." Length, 10 in.x1¾ in. dia. $63 per doz.

"Empire." Length, 11 in.x1¾ in dia. $74 per doz.

"Empire." Length, 12 in.x1⅞ in. dia. $84 per doz.

"Empire." Length, 12 in.x1⅞ in. dia. $87 per doz.

"Empire." Length, 14 in.x2¼ in. dia. $156 per doz.

"Empire." Length, 14 in.x2¼ with pulleys. $220 per doz.

"Empire." Length, 16 in.x2½ with pulleys. $360 per doz.

Dis., 40%.

EMPIRE CLOTHES DRYING BARS. $10 per doz. Dis., 40%.

Closed.

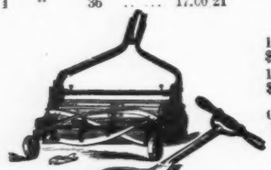
Open for use.

**Lawn Mowers.**

Forward Cut Mowers.

| In. | Lbs. | | In. | Lbs. | |
|---|---|---|---|---|---|
| 0 | Weight, 30¾ | $13.00 | 16 | Weight, 38 | $19.00 |
| 2 | " 31½ | 15.00 | 18 | " 41 | 21.00 |
| 4 | " 36 | 17.00 | 21 | | 34.00 |

Dis. 60 and 5%.



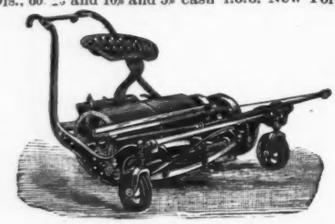
| 10 in. | 12 in. | 14 in. |
|---|---|---|
| $13.00 | $15.00 | $17.00 |
| 16 in. | 18 in. | 20 in. |
| $19.00 | $21.00 | $23.00 |

24 in., $30.00.

Geared at both ends. Dis. 60 and 10 and 5 and 5%.

10 in. Croquet, 18 pound, mower..... $11.00
10 in..... 13.00
12 in..... 15.00
14 in..... 17.00
16 in..... 19.00
18 in..... 21.00
20 in..... 23.00

Dis., 60, 10 and 10 and 5% cash f.o.b. New York.



New Excelsior Horse Lawn Mower.

| | |
|---|---|
| In. cut, without shafts or seat | $65.00 |
| " with shaft and seat | 110.00 |
| " " " " | 135.00 |
| " " " " | 170.00 |
| boots, per set | 12.00 |

Dis. 50%.

Excelsior Three-Blade Mower and Roller.

8 in., $11.00; 1 in., $13.00; 12 in., 5.00; 14 in., $17.00; 16 in., $19.00; 18 in., $21.00; 20 in., $23.00

Dis. 60% and 5% cash 30 days f.o.b. New York.

**Link Belting.** Price per running foot, net.

| No. | Price. | No | Price |
|---|---|---|---|
| 25 | $0.13 | 78 | $0.40 |
| 32 | .13 | 83 | .45 |
| 33 | .12 | 85 | .50 |
| 34 | .13 | 88 | .50 |
| 35 | .14 | 95 | .60 |
| 42 | .16 | 103 | .75 |
| 45 | .16 | 105 | .70 |
| 51 | .20 | 106 | .90 |
| 52 | .25 | 107 | .80 |
| 55 | .22 | 108 | .80 |
| 57 | .24 | 109 | .90 |
| 62 | .30 | 114 | 1.10 |
| 66 | .30 | 122 | 1.50 |
| 67 | .30 | 124 | 1.30 |
| 75 | .35 | 146 | 1.40 |
| 77 | 35 | | |

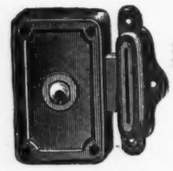
Sprocket wheels..... 25%

**Locks.**

YALE PATENT.

RIM STORE LATCH.

Per doz.
3 × 5 in., 4 keys..... $18.00
2½ × 4 in., 3 keys..... 39.00



RIM NIGHT LATCH.

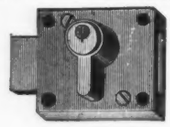
Spring lock, 3 keys..... 18.00
Dead lock, 3 keys..... 25.00

NIGHT LATCH.

Escutcheon..... 39.00
" ..... 36.00

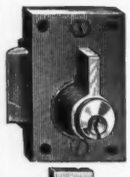
MORTISE DEAD LOCK.

4⅝ × 3½..... 45.00
2⅜ × 3½..... 24.00



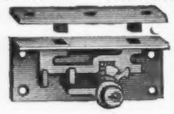
CUPBOARD LOCKS.

Plated Nose..... 13.20
Brass Nose..... 12.00



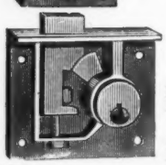
CUPBOARD

Dead Lock..... 10.80
Spring Lock..... 13.80



CHEST LOCKS.

Plated nose..... 19.20
Brass " ..... 18.00



DRAWER LOCK.

Plated nose..... 10.20
Brass " ..... 9.00

KNOB LOCKS.

5 × 3⅜..... 22.50
5 × 3⅜..... 20.00
4¼ × 3⅜..... 13.25
3½ × 3⅜..... 10.50

STANDARD LATCHES.

Dead locks.

3¾ × 2¾....24.00
2½ × 3⅜....14.00
1¾ × 2⅝....12.00

NIGHT LATCHES.

3¼ × 3⅜ 20.00
2½ × 3¾....18.00

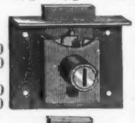
DRAWER LOCKS.

2 × 1⅝, two tumblers.

Plated nose..... 7.50
Brass " ..... 6.00

Three tumblers.

Plated nose..... 9.00
Brass " ..... 7.50



RIM FLUSH DRAWER LOCK.

2 in. diameter.

| | 2 tumblers. | 3 tumblers. |
|---|---|---|
| Plated nose | 7.50 | 9.00 |
| Brass " | 6.00 | 7.50 |

BRONZE SPRING PADLOCK.

2 flat steel keys.

| In. | |
|---|---|
| 1 | 11.00 |
| 1¼ | 12.00 |
| 1½ | 13.50 |
| 1¾ | 14.50 |
| 2 | 16.00 |
| 2¼ | 17.50 |

Subject to special net prices; no discount

YALE KEYS.

**Machinery—Foot Power.**

Engine Lathes

8 in. swing, 20 in. bet. centers, 36 in. bed, 240 lbs. weight, $60.

8 in. swing, 30 in. bet. centers, 46 in. bed, 260 lbs. weight, $70.

8 in. swing, 36 in. bet. centers, 52 in. bed, 280 lbs. weight, $75.

Boxing for export, $2.50 extra; f.o.b. at Cincinnati, 25 % dis.

SAWS AND LATHES

Victor Scroll Saw, Cuts to 3 Inches.

24-inch swing, with 12 saw blades ... Dis., 20%.

Empire Scroll Saw, Cuts to 3 Inches.

24-in. swing, drill and tilting table.

Price, boxed..... $25

Dis., 20%

The Acme Combination Saw.

Hand or steam power.

Adjustable table and gauges.

| | |
|---|---|
| Price, boxed | $40 |
| Scroll saw attachment | |
| Boring attachment | 10 |
| Moulding attachment | 10 |

Dis., 20%.

Paragon Self Feed Rip Saw.

Two changes of speed; three changes of feed.

Price, with one 10 in. saw, $50.00

Dis., 20%.

Diamond Mortising Machine.

Will mortise ¼ to 1 in. wide, 3 in. deep.

" cut tenons ¼ to ¾ thick, 3 in. wide.

Price, with 3 chisels..... $25.00

Dis., 20%

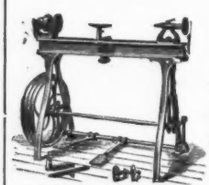
The "Star" Lathe.

Swings 9 × 25 in., back geared screw cutting.

Feeds in or out, right or left. Adjustable Tail Stock for Tapers.

Price, No. 1.....$75.00

Dis., 20%.



The Crown Lathe.

Swings 8 × 24 in.

| | |
|---|---|
| Price, boxed, No. 1 | $30.0 |
| Compound slide rest | 10.0 |
| Countershaft | 10.0 |

Dis., 20%.

Rival Scroll Saw, with six extra saw blades, twist drill and wrench.

Price..... $10.00

Lathe attachment..... $3.00

Dis., 25%.

Rival.

The Challenge Scroll Saw, for shell, bone wood, or metal.

Nickel Plated, with six extra saws, twist drill and wrench.

Boxed.....$20.00

With lathe attachment.....$5.00

Dis., 25%.

Challenge.

Hand Circular Rip Saw.

Cuts 3¾ thick, 19 in. wide.

Price $50.00.

Dis.,

Scroll and Circular saw Combined Combined Machines.

Combined circular scroll saw and boring attachment—2 circular saws, 12 assorted scroll saws, boring attachment, and self-centering drill chuck.....$50.00

Combined circular and scroll saw—2 circular and 12 scroll saws..... 40.00

Circular saw—1 extra rip and 1 cross-cut saw..... 35.00

Counter shaft for steam power..... 10.00

Dis., 35%.

Foot Power Former.
$20.00; Knives extra, $1.00 each.
Dis., 35%.

Mortising Machine.
$22.00; Chisels, $1.00 each.
Dis., 35%.
Blind Slat Chisels, 3 set bits, $5.00.
Dis., 20%.

Tenoning Machine.
Price, $25.
Dis., 35%.

Velocipede Scroll Saw,

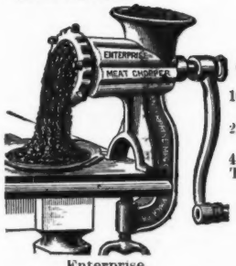
Without boring attachment..... $20.00
With " " ..... 23.00
1 doz. saw blades, 1 3-16 bit. } Included. Dis., 35%.

Lathe.

centres, 1 spur, 2 tool rests and sockets, 1 turned face-plate, $35.
Dis., 30%.

Lathe.
One turned face-plate, two pointed and one spur center, two rests, with sockets and plate for hand tools, slide rest-wrench, belting, etc., $40.
Dis., 25%.

**Meat Cutters.**




5, each..... $2.00
10, " ..... 3.00
22, " ..... 4.00
41, " ..... .50.00
This is a power machine.
Dis., 50%.
Enterprise.

**Motors (Water).**

Size No. 8, for Sewing Machines, etc , $18 each.

No. 9, ⅛ horse-power (30 lbs. pressure), ¼ h. p. (50 lbs.), ½ h. p. 100 lbs.), ¾ h. p. (150 lbs.), 1 h. p. (200 lbs.), $30.
No. 10, ¼ horse-power (30 lbs. pressure), ½ h. p. (50 lbs.), 1 h. p. (100 lbs.), 1½ h. p. (150 lbs.), 2 h. p. (200 lbs.), $50.
No. 10½, ⅛ horse-power (30 lbs. pressure), 1 h. p. (50 lbs), 2 h. p. (100 lbs.), 3 h. p. (150 lbs.), 4 h. p. (200 lbs.), $75.
No. 11, 1 horse-power (30 lbs. pressure), 1½ h. p. (50 lbs.), 3 h. p. (100 lbs.), 4½ h. p. (150 lbs.), 6 h. p. (200 lbs.), $100.
No. 12, 2 horse-power (30 lbs. pressure), 3 h. p. (50 lbs.), 6 h. p. (100 lbs.), 9 h. p. (150 lbs.), 12 h. p. (200 lbs.), $175.
No. 13, 3 horse-power (30 lbs. pressure), 5 h. p. (50 lbs.), 10 h. p. (100 lbs.), 15 h. p. (150 lbs.), 20 h. p. (200 lbs.), $285.
Dis., 30%.

Governors for 11 and 12, $25 extra; for No. 13, $35 extra.

| | | | | | |
|---|---|---|---|---|---|
| Price..... | $120 | $160 | $200 | $250 | $300 |
| MINING WHEELS ..... | 16 | 18 | 20 | 22 | 24 |

Power according to pressure:
3 to 50, 10 to 100, 15 to 150, 20 to 200, 30 to 300 H. P.

Concentrating Machinery.

Blake Improved Crusher: 10x7, weight 7,500; $410.00.
Blake Improved Crusher: 15x9, weight 9,000; $580.00.
Discount 25%.
Cornish Crushing Rollers: 20 diameter, 10 face, weight 5,400; $450.00.
Cornish Crushing Rollers: 20 diameter, 14 face, weight 6,000; $500.00.
Cornish Crushing Rollers: 22 diameter, 14 face, weight 2,500; $625.00.
Cornish Crushing Rollers: 27 diameter, 14 face, weight 13,000; $750.00.
Cornish Crushing Rollers: 30 diameter, 14 face, weight 15,000; $850.00.
Discount 25%.
Complete Sizing Arrangement, consisting of Revolving Screens of Steel Sheet and Hydraulic Classifier.
For Concentrator, 25 tons capacity, $250; 50 tons capacity, $350; 75 tons capacity, $450; 100 tons capacity, 800. Discount, 10 per cent.
Automatic working Jig Machines, all complete, wood-wor kincluded, with slide motion: 2 sieves, $310; 3 sieves, $360; 4 sieves, $450.
With Eccentric Motion, all complete, woodwork included: 1 sieve, $200; 2 sieves, $270; 3 sieves, $320; 4 sieves, $330.
Automatic working Double Jig Machines, all complete, woodwork included: 4 sieves, $210; 6 sieves, $335; 8 sieves, $425. Discount, 25 per cent.
Single Rittinger Percussion Tables, all the iron parts, $350; Double Rittinger Percussion Tables, all the iron parts, $500. Discount, 10 per cent.
Improved Rotary Tables, all the iron parts and pipes, $200. Discount, 25 per cent.

**Nails and Tacks.**

Swedes. Tacks.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Per doz. | ½ | ⅝ | 1 | 1½ | 2 | 2½ | 3 | | |
| ½ wt.. | 35 | 40 | 46 | 50 | 55 | 60 | 65 | 75 | |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | oz. |
| 85 | 1.00 | 1.20 | 1.40 | 1.60 | 1.75 | 1.85 | 2.15 | 2.55 | |
| Doz.full | ½ | ⅝ | 1 | 1½ | 2 | 2½ | 3 | 4 | |
| weight | 60 | 70 | 80 | 90 | 1.00 | 1.10 | 1.20 | 1.40 | |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | oz. |
| 1.60 | 1.90 | 2.30 | 2.70 | 3.10 | 3.40 | 3.80 | 4.20 | 5.00 | |
| lb., bulk | ½ | ⅝ | 1 | 1½ | 2 | 2½ | 3 | 4 | |
| or paper | 1.60 | 1.25 | 1.00 | 80 | 66 | 58 | 52 | 46 | |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | |
| 36 | 32 | 31 | 30 | 29 | 28 | 28 | 28 | 28 | |

Discount, 67½, 10 and 2%.

O. H. Swedes.
Price, same as Swedes.
Swedes steel tacks same list price as iron.

Upholsterers.

Discounts, 72½, 10 and 2%.
Price, same as Swedes.

Cut Tacks. Price per dozen ounces.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 | 10 |
| ¼ wt..... | .. | .. | .. | .. | .. | 35 | 40 | 45 | 50 | 55 |
| | 12 | 14 | 16 | 18 | 20 | | | | |
| | 60 | 70 | 80 | 90 | 1.00 | | | | |
| ⅛ wt. .... | 1 | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 | 10 |
| | 45 | 50 | 50 | 55 | 60 | 65 | 70 | 80 | 95 |
| | 12 | 14 | 16 | 18 | 20 | | | | |
| | 1.10 | 1.25 | 1.40 | 1.55 | 1.70 | | | | |
| Full wt... | 1 | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 | |
| | 80 | 90 | 90 | 1.00 | 1.10 | 1.20 | 1.30 | 1.50 | |
| | 10 | 12 | 14 | 16 | 18 | 20 | | | |
| | 1.80 | 2.10 | 2.40 | 2.70 | 3.00 | 3.30 | | | |

Discount, 70, 10 and 2%.

Carpet Tacks, flat and oval heads.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Blued, doz. | oz. | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| ¼ wt. .... | | 35 | 40 | 45 | 50 | 55 | 65 | 75 | 85 | 95 |
| | | 22 | 24 | | | | | | | |
| | | 1.05 | 1.15 | | | | | | | |
| " ⅛ wt. | | 4 | 6 | 8 | 10 | 12 | 14 | 16 | | |
| | | 65 | 70 | 80 | 95 | 1.10 | 1.25 | 1.40 | | |
| | | 18 | 20 | 22 | 24 | | | | | |
| | | 1.55 | 1.70 | 1.85 | 2.00 | | | | | |
| Tinned, doz. ¼ wt. | | 4 | 6 | 8 | 10 | 12 | 14 | 16 | | |
| | | 50 | 55 | 60 | 75 | 85 | 1.00 | 1.1 | | |
| | | 18 | 20 | 22 | 24 | | | | | |
| | | 1.20 | 1.35 | 1.45 | 1.60 | | | | | |
| Tinned, doz. ⅛ wt. | | 4 | 6 | 8 | 10 | 12 | 14 | | | |
| | | 95 | 1.05 | 1.15 | 1.40 | 1.60 | 1.85 | | | |
| | | 16 | 18 | 20 | 22 | 24 | | | | |
| | | 2.10 | 2.35 | 2.60 | 2.85 | 3.10 | | | | |

Discount, 72½, 10 and 2%.

Finishing Nails.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch.... | ⅝ | 3½-8 | 4-8 | 4½-8 | 5-8 | 5½-8 | 6-8 | 7-8 | 1 |
| Per lb... | 48 | 40 | 32 | 28 | 26 | 24 | 22 | 20 | 18 |

1⅛ and larger.
16
Discount, 60, 10 and 2%.
Chair Nails.
Doz. ⅛ wt. ; doz. full wt.; pound B. or P.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Inch..⅜ | 3½-8 | 4-8 | 4½-8 | ⅝ | 5½-8 | 6-8 | 7-8 | |
| Per lb.51 | 43 | 35 | 31 | 29 | 27 | 25 | 23 | |
| 1 | 1¼ | | | | | | | |
| 21 | 19 | | | | | | | |

Discount, 60, 10 and 2%.
Common and patent brads.

| inch. | Price per doz. ⅛ wt. | Price per doz. full wt. | Price per lb. in papers or bulk. |
|---|---|---|---|
| 2-8..... | .50 | 1.00 | 1.25 |
| 3-8..... | .60 | 1.20 | .80 |
| 4-8..... | .65 | 1.30 | .58 |
| 5-8..... | .72 | 1.44 | .48 |
| 6-8..... | .80 | 1.60 | .36 |
| 7-8..... | .90 | 1.80 | .30 |
| 1..... | 1.00 | 2.00 | .26 |
| 1⅛..... | 1.12 | 2.24 | .25 |
| 1¼..... | 1.26 | 2.52 | .24 |
| 1½..... | 1.82 | 3.64 | .22 |
| 1¾..... | 2.25 | 4.50 | .20 |
| 2..... | 2.43 | 4.86 | .18 |

Dis. 60, 10 and 2%.

**Oils.** LUBRICATING.

Lubroleine A cylinder oil 50 in. barrels.
Lubroleine D cylinder oil 40 in. barrels.
Lubroleine A machine oil 45 in. barrels.
Lubroleine B machine oil 35 in. barrels.
Lubroleine A engine oil 50 in. barrels.
Lubroleine B engine oil 40 in. barrels.
In cases 5c gal. extra.
Crescent Axle Grease.—Barrels, 3c per lb; 100-lb. kegs, 3½c lb.; 2-lb. decorated tins, $12, gross less 5 per cent.
Texas Star Axle Grease.—Barrels, 2½c per lb.; 10 lb. kegs, 3c per lb.
See Axle Grease, page 2.

**Packing.**

Eureka, 75c. per lb. Dis., 40%.
Soapstone—Standard, 8c. per lb.
XX. 11c. per lb.
Crown—No. 1, 23c. per lb.
No. 2, 26c. per lb.
Climax, 9c. per lb. Net.
SELDEN'S PATENT.
For Steam, Air, Water and Ammonia.
With Rubber Core, 60 cents per lb.
Dis., 25 and 5%.
With canvas core, 50 cents per lb.
Dis., 30 and 5%.

**Paper, Waxed.**

| White. | Per ream. |
|---|---|
| XX, 24 × 36..... | $2.20 |
| "Sparks' A No. 1 Brand," 24 × 36..... | 2.10 |
| "Progress No. 2," 24 × 36..... | 1.80 |
| "Climax," 24 × 36..... | 1.60 |
| 24 × 38..... | 1.36 |
| FF, or B, F., 24 × 36..... | 4.00 |
| Colored. | |
| A. 24 × 36..... | 2.40 |
| B. 24 × 36..... | 2.00 |
| Manilla. | |
| A, 24 × 36..... | 1.88 |
| "Climax," 24 × 36..... | 1.40 |

Discount, 5%.

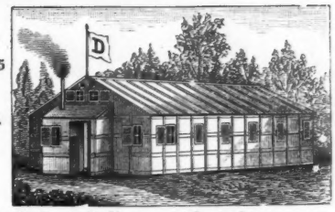
| Manilla. No. | Flat bags. Per M. | Sq. bags. Per M. | White. No. | Flat bags. Per M. | Sq. bags. Per M. |
|---|---|---|---|---|---|
| ¼ | $1.25 | $1.40 | ¼ | $1.70 | $1.90 |
| ⅛ | 1.50 | 1.75 | ½ | 2.05 | 2.25 |
| 1 | 1.85 | 1.85 | 1 | 2.60 | 2.85 |
| 1½ | 2.00 | 2.30 | 1½ | 2.80 | 3.15 |
| 2 | 2.25 | 2.60 | 2 | 3.12 | 3.45 |
| 3 | 2.70 | 3.10 | 3 | 3.70 | 4.10 |

| Mikado. No. | Per M. | Mikado. No. | Per M. |
|---|---|---|---|
| ¼ | $1.40 | 1½ | $2.30 |
| ⅛ | 1.75 | 2 | 2.60 |
| 1 | 1.85 | 3 | 3.10 |

Discount, 10%

**Portable Houses.**

Weight. 450 lbs.
Price, $150.
Closes securely.
Dis., 10%.




Weight, 85 lbs. per section.
Price, $220.
Dis., 10%.

No. 10.—26 × 33 ft.. including veranda and rear extension. Main part, 19 × 26 ft..... $500.0
Dis., 10%.

F. o. b. Cars Chicago or New York

| Size. | Doors. | Windows. | No. porch. | End porch | Side porch. |
|---|---|---|---|---|---|
| 7 × 9 | 1 | 2 | $64.00 | $71.00 | $73.00 |
| 7 × 12 | 1 | 2 | 75.00 | 82.00 | 87.60 |
| 7 × 16 | 1 | 2 | 90.00 | 97.00 | 106.00 |
| 7 × 19 | 2 | 4 | 117.00 | 124.00 | 136.00 |
| 10 × 9 | 1 | 2 | 70.00 | 80.00 | 79.00 |
| 10 × 12 | 1 | 2 | 92.00 | 102.00 | 104.00 |
| 10 × 16 | 1 | 4 | 108.00 | 118.00 | 124.00 |
| 10 × 19 | 2 | 4 | 134.00 | 144.00 | 153.00 |
| 10 × 26 | 2 | 4 | 172.00 | 182.00 | 198.00 |
| 10 × 32 | 2 | 6 | 203.00 | 213.00 | 235.00 |
| 12 × 12 | 1 | 2 | 102.00 | 114.00 | 114.00 |
| 12 × 1 · | 2 | 4 | 138.00 | 150.00 | 154.00 |
| 12 × 19 | 2 | 4 | 160.00 | 172.00 | 179.00 |
| 12 × 26 | 2 | 4 | 193.00 | 205.00 | 219.30 |
| 12 × 32 | 2 | 6 | 245.00 | 257.00 | 277.00 |

**Post Hole Diggers.**

| | | |
|---|---|---|
| Little Giant..... | $36.00 | doz 11 cu.ft. |
| Hercules..... | 30.00 | " " " " |
| New Champion.... | 20.00 | " " " " |
| Scheidler..... | 36.00 | " " " |

Dis. 40 .o.b. New York or Boston.

**Presses.**

41, 42, 43, 44, 45.

Combined press for cutting, forming, horning and seaming.
Particulars of flat front presses, including beds, slides, bolsters, plates, etc.
Prices are net, delivered on steamers in New York, including insurance, etc.

| Nominal size of press..... | 41 | 42 | 43 | 44 | 450 |
|---|---|---|---|---|---|
| Price, including et ceteras..... | $140 | $220 | $300 | $420 | $700 |
| Weight, about.....lbs | 600 | 1050 | 1900 | 3600 | 7200 |
| Greatest diameter that can be wired.....ins | 5 | 7 | 10 | 14 | 20 |
| Greatest depth that can be wired.....ins | 8 | 10 | 13 | 16½ | 20 |
| Hole through bed—circle intersecting.....ins | 4½ | 6 | 8½ | 12 | 17 |
| Hole through back—width.....ins | 8 | 9½ | 12 | 15½ | 20½ |
| Width between die clamps—clear.....ins | 8 | 11 | 15 | 20 | 27 |
| Distance back from center of slide bar.....ins | 4½ | 5½ | 7 | 9 | 12 |
| Height to slide-bar, when up..ins | 5¼ | 6½ | 7½ | 8½ | 9 |
| Stroke of slide-bar.....ins | 1 | 1¼ | 1½ | 1¾ | * |
| Adjustment of slide-bar.....ins | 1 | 1¼ | 1½ | 1¾ | |
| Diameter of fly-wheel.....ins | 20 | 26 | 32 | 38 | 44 |
| Width of fly-wheel.....ins | 3 | 4 | 5 | 6 | 7 |
| Weight of fly-wheel, about....lbs | 125 | 250 | 420 | 725 | 1100 |
| Speed per minute, about.....rev | 120 | 110 | 100 | 90 | 80 |
| Cubic feet boxed, about..... | 30 | 40 | 50 | 60 | 70 |

**Printers' Sundries.**
Wood rules, 12 cents per yard.
Wood rules, on end wood, 15 cents per foot.

EUREKA STAND.
12 full cases.

Price without cases.....$12.50
Boxing and cartage..... 1.25

SHOOTING STICKS.

Each.
No. 1, 75c.
No. 2, $1.
No. 4, 45c., black.
No. 4, 60c., bright.
No. 5, 60c., black.
Nc. 5, 75c., bright.

GAUGE PINS—ALL SIZES.
Brass, 40c. doz. | Steel, 60c. doz.
Wire, 25c. doz. | Golden, 40c. doz.

MITRE BOXES.
Regular size, 2 in., 50c. each.
Extra size, 3½ in., 75c. each.

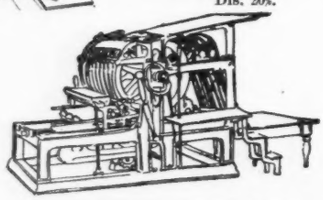
LEAD CUTTER.

Curtis' Lead Cutter .....$2.00

PROOF PRESS, "OUR OWN."
× 32, complete, with Brayer.....$28.00

THE GLOBE PRESS.

8 x 12 in. inside clear, with throw-off .....$150.00
9 x 13 in. inside clear, with throw-off..... 175.00
10 x 15 in. inside clear, with throw-off ..... 200.00
11 x 17 in. inside clear, with throw-off..... 250.00
Steam fixtures..... 15.00
Fountain..... 12.50
Dis. 20%.



THE "LIBERTY" CYLINDER PRESS.
For Newspaper and Job Printing.

| | Bed. | Form. | |
|---|---|---|---|
| No. 5 | 29 × 42 | 24 × 40 | $1,200 |
| 6 | 33 × 47 | 28½ × 45 | 1,300 |
| 7 | 37 × 51 | 33 × 49 | 1,600 |

Dis., 20 and 5%

THE "LIBERTY" JOB PRINTING PRESS.
Size of chase.

| | | |
|---|---|---|
| No. 2 — 7 | × 11 | $200 |
| 2a— 9 | × 13 | 250 |
| 3 —10 | × 15 | 300 |
| 3a—11 | × 17 | 350 |
| 4 —13 | × 19 | 400 |
| 5 —14½ | × 22 | 500 |

Dis., 12½ and 5%.

Two sizes built extra strong for boxmakers, embossing, etc.

| | | |
|---|---|---|
| No. 3a | 11 × 17 | $375 |
| 4 | 13 × 19 | 425 |

Dis., 12 and 5%.

Fountains, either size, $25 extra, if ordered with press.
Steam fixtures, either size, $15 extra.

THE AMERICAN CARD AND BILL HEAD PRESS.

| | | |
|---|---|---|
| No. 5 | 4 × 6 | $10 |
| 7 | 6 × 9 | 30 |
| 8 | 8 × 12 | 60 |

Dis., 20% and 5%.

THE "LIBERTY" PAPER CUTTER.

Cuts 30 inches.....$140.00
Extra knife..... 18.80
Dis., 12½ and 5%.

THE "LIBERTY" IMPOSING TABLES

Marble top.

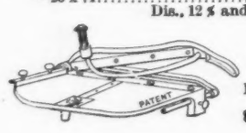
| | | |
|---|---|---|
| No. 1 | 24 × 36 | $24 |
| 2 | 32 × 48 | 38 |
| 3 | 26 × 74 | 44 |
| 4 | 36 × 48 | 48 |

Dis., 12½ and 5%.

Slate Top.

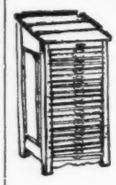
| | | |
|---|---|---|
| No. 1 | 24 x 36 | $18 |
| | 32 x 48 | 25 |
| | 26 x 74 | 32 |

Dis., 12½ and 5%.



Kelsey & Co.,
The Eagle card and Paper Cutter, 24½ inch
$12 each, $100 per doz.

TYPE CABINETS.

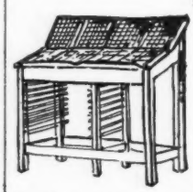


| Number of cases. | Stained. Flat. | Stained. Galley.* | Grained. Flat. | Grained. Galley.* |
|---|---|---|---|---|
| | $ | $ | $ | $ |
| 12⅝ | 12.00 | 14.50 | 14.00 | 17 00 |
| 16⅞ | 15.00 | 17.50 | 17.00 | 20.00 |
| 18⅞ | 16.50 | 19.00 | 18.50 | 21.50 |
| 20¾ | 18.00 | 20.50 | 20.00 | 23.00 |
| 12¾ | 15.00 | 17.50 | 17.00 | 20.00 |
| 16¾ | 18.00 | 20.50 | 20.00 | 23.00 |
| 18¾ | 19.50 | 22.00 | 21.50 | 24.50 |
| 20¾ | 22.00 | 24.50 | 23.00 | 26.00 |
| 12 full | 18.00 | 20.50 | 20.00 | 23.00 |
| 16 " | 22.00 | 24.50 | 24.00 | 27.00 |
| 18 " | 24.00 | 26.50 | 26.00 | 29.00 |
| 20 " | 26.00 | 28.50 | 28.00 | 31.00 |

| Number of cases. | Pine. Flat. | Pine. Galley.* | Cherry. Flat. | Cherry. Galley.* | Napanoch. Flat. | Napanoch. Galley.* | Walnut. Flat. | Walnut. Galley.* |
|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ |
| 12⅝ | 18.00 | 21.00 | 20.00 | 23.00 | 22.00 | 25.00 | 23.00 | 26.00 |
| 16⅞ | 22.00 | 25.00 | 24.00 | 27.00 | 26.00 | 29.00 | 27.00 | 30.00 |
| 18⅞ | 24.00 | 27.00 | ..... | ..... | ..... | ..... | ..... | ..... |
| 20¾ | 26.00 | 29.00 | 28.00 | 31.00 | 30.00 | 33.00 | 31.00 | 34.00 |
| 12¾ | 21.00 | 24.00 | 23.00 | 26.00 | 25.00 | 28.00 | 26.00 | 29.00 |
| 16¾ | 25.00 | 28.00 | 27.00 | 30.00 | 29.00 | 32.00 | 30.00 | 33.00 |
| 18¾ | 27.00 | 30.00 | ..... | ..... | ..... | ..... | ..... | ..... |
| 20¾ | 29.00 | 32.00 | 31.00 | 34.00 | 33.00 | 36.00 | 34.00 | 37.00 |
| 12 full | 24.00 | 27.00 | 26.00 | 29.00 | 28.00 | 31.00 | 29.00 | 32.00 |
| 16 " | 28.00 | 31.00 | 30.00 | 33.00 | 32.00 | 35.00 | 33.00 | 36.00 |
| 18 " | 30.00 | 33.00 | ..... | ..... | ..... | ..... | ..... | ..... |
| 20 " | 32.00 | 35.00 | 34.00 | 37.00 | 36.00 | 39.00 | 37.00 | 40.00 |

—*Furnished with galley top and extra drawer for copy.
Dis., 20 and 5%.

CASE STANDS AND RACKS.



Stands.

| | |
|---|---|
| Single, without racks | $3.75 |
| " with racks for 8 full cases | 4.00 |
| Single, with racks for 10 full cases | 4.2 |
| Single, with racks for 12 full cases | 4.50 |
| Single, with racks for 14 full cases | 4.75 |
| Double, without racks | 4.25 |
| " with racks for 8 full cases | 4.50 |
| Double, with racks for 16 full cases, and gal. rest | 6.25 |
| Double, with racks for 20 full cases and gal. rest | 6.50 |
| " " " " 24 " " " " " | 6.75 |
| " " " " 24 ⅔ cases | 5.25 |
| " " " " 8 full and 8 ⅔ cases | 5.00 |
| " " " " 8 " " 8 ¾ " | 5.25 |
| " " " " 10 " " 12 ⅔ " | 5.55 |
| " " " " 12 " " 16 ⅔ " | 5.70 |
| " " " " 12 " " 16 ¾ " | 6.05 |
| Stands with closed ends, extra | 2.00 |
| Extra slides for stands, each | .05 |

GALLEY RACKS.
From $3 up.

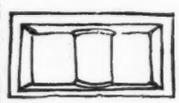
LEAD CUTTERS,
From $2 up.
Dis., 20 and 5%.

THE "LIBERTY" TYPE CASES.

| Name. | Outside Measurements. |
|---|---|
| Full size | 32¼x16½x19-16 |
| Rooker size | 28½x14¼x1 9-16 |
| ¾ size | 26x16½x1⅝ |
| ⅔ size | 22⅝x16½x1⅝ |
| Enlarged size | 32¼x23x2 3-16 |
| Wood type " | 32¼x23x1 9-16 |
| Mammoth " | 44x23x1 9-16 |

Cabinet case sides extend 1½ to 3 inches. In ordering cabinet cases, state whether high or low fonts are wanted. 30 and 5%.

THE "LIBERTY" STEEL SHOOTING STICKS.
Bright, $1 each.
Nickelplated, $1.25 each.
Dis., 40%.



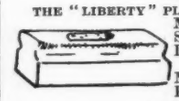
STANDARD METAL FURNITURE
25c. a pound.
In fonts of 25, 50, 75 and 100 lbs.
Dis., 15%.

THE "LIBERTY" MALLETS

| | |
|---|---|
| Hickory, small | $ .20 |
| " medium | .25 |
| " large | .30 |
| " iron bound | 1.00 |
| Lignum Vitæ, No. 4 | .30 |
| " " No. 3 | .40 |
| " " No. 2 | .50 |
| " " No. 1 | .70 |

Dis. 20 and 5%.

THE "LIBERTY" PLANERS AND PROOF PLANERS.



| | |
|---|---|
| Midget planer | 10c. |
| Small Maple | 20c. |
| Large " | 25c. |
| " b'ked with leather | 30c. |
| Midget " " " | 12c. |

Proof planer, faced with cloth, 50c.
Dis., 40%.

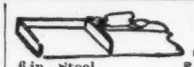
COMPOSING STICKS.

GROVER'S PATENT AND UNION.
Screw or Nevs.

| | | |
|---|---|---|
| 6 in. | 1.10 | $ .90 |
| 8 " | 1.20 | 1.10 |
| 10 " | 1.40 | 1.20 |
| 12 " | 1.60 | 1.40 |
| 14 " | 1.80 | 1.60 |
| 16 " | 2.00 | 1.80 |
| 18 " | 2.20 | 2.00 |
| 20 " | 2.40 | 2.20 |

Composing rules, 14 ems pica and under, 25 cents.

THE "LIBERTY" COMPOSING STICKS.



Grover.

| | | | |
|---|---|---|---|
| 6 in., Steel | $ .90 | 16 in., Steel | $1.80 |
| 8 " | 1.00 | 18 " | 2.00 |
| 10 " | 1.20 | 20 " | 2.20 |
| 12 " | 1.40 | Extra Clasp | .10 |
| 14 " | 1.60 | Extra Knee | .40 |

Screw.

| | | | |
|---|---|---|---|
| 6 in., Steel | $ .75 | 16 in., Steel | $1.45 |
| 8 " | .80 | 18 " | 1.60 |
| 10 " | 1.00 | 20 " | 1.75 |
| 12 " | 1.15 | Extra Knee | .30 |
| 14 " | 1.30 | " Screw and Nut. | .10 |

Dis., 40%.

Yankee.

| | | | |
|---|---|---|---|
| 6-in., Steel | $ .75 | 12 in., Steel | $1.15 |
| 8 " | .80 | Extra Knee | .30 |
| 10 " | 1.00 | " Clamp and Screw | .15 |

Other Sizes to Order.
Dis., 40%.

Albion.

| | | | |
|---|---|---|---|
| 6-in., Steel | $1.00 | 6-in, German Silver | $1.50 |
| 8 " | 1.10 | 8 " " " | 1.75 |
| Extra Knee | .40 | Extra Screw and Nut. | .10 |

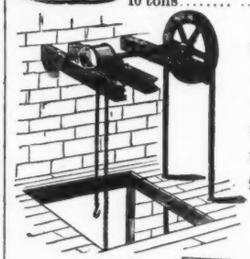
**Pulley Blocks.**

WESTON DIRECT.

| | Each. |
|---|---|
| ⅛ ton | $10 |
| ¼ ton | 13 |
| ½ ton | 15 |
| 1 ton | 20 |
| 1½ tons | 25 |
| 2 tons | 30 |
| 3 tons | 40 |

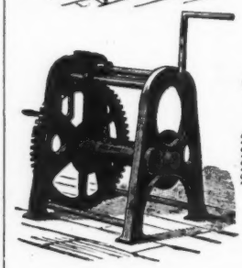
Geared.

| | |
|---|---|
| 1 ton | 34 |
| 2 tons | 55 |
| 3 tons | 60 |
| 4 tons | 80 |
| 5 tons | 110 |
| 6 tons | 150 |
| 8 tons | 210 |
| 10 tons | 250 |



DOUBLE LIFT HOISTS FOR HATCHWAYS, ETC.

| | |
|---|---|
| 500 lbs | $25.00 |
| 1000 " | 50.00 |
| 1500 " | 65.00 |
| 2000 " | 80.00 |
| 500 " | 30.00 |



WESTON CRAB SAFETY BRAKE, HANDLES CANNOT FLY BACK.

| Each. | |
|---|---|
| 21 | $35.00 |
| 22 | 45.00 |
| 23 | 65.00 |
| 25 | 100.00 |

**Pumps.**

Fig. 199. Fig. 202½. Fig. 205.

Fig. 199 and 202½.

| | No 0 | 1 | 2 | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|---|---|
| Iron | $3.50 | $4.00 | $4.50 | $5.00 | $5.50 | $6.50 | $8.00 | $10.00 |
| | 14/4 | 16/8 | 18/9 | 20/10 | 22/11 | 27/1 | 33/4 | 41/5 |
| Brass cyl | $ 5.50 | 6.00 | 7.00 | 8.00 | 10.00 | 13.06 | 18.00 | 25.00 |
| | 22/11 | 25/0 | 29/2 | 33/4 | 41/8 | 54/2 | 75/0 | 104/2 |
| Brass | $ 7.75 | 8.75 | 10 50 | 14.00 | 17.00 | 21.00 | 27.00 | 35.00 |
| | 32/3½ | 36/5½ | 43/9 | 58/4 | 70/10 | 87/6 | 112/6 | 145/10 |

Iron, 65%; Brass and Brass Cyl., 60%.

| Fig. 205. | No. 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $4.25 | $4.75 | $5.25 | $5.75 |
| 65%. | 17/8½ | 19/9½ | 21/40½ | 23/11½ |

Fig. 390. Fig. 394. Fig. 442.

Fig. 390—Hand Force.

| | Diam., 2 in. | 2½ in. | 3 in. | 3½ in. | 4 in. |
|---|---|---|---|---|---|
| Iron | $8.00 | $9.50 | $11.00 | $17.00 | $18.00 |
| | 33/4 | 39/7 | 45/10 | 70/10 | 75/ |
| Brass cylinder | $13.50 | $14.00 | $15.00 | $24.00 | $30.00 |
| | 56/3 | 58/4 | 62/6 | 100/ | 125/ |
| Brass | $20.00 | $21.00 | $32.00 | $38.00 | $47.00 |
| | 83/4 | 87/6 | 133/4 | 158/4 | 195/10 |

Iron, 55%; Brass and Brass Cylinder, 50%.

Fig. 394—Hand Force Pump.

| | Diam., 2½ in. | 3 in. | 3½ in. | 4 in. |
|---|---|---|---|---|
| Iron | $12.50 | $14 50 | $21.50 | $22.50 |
| | 52/1 | 60/5 | 89/7 | 93/9 |
| Brass cylinder | $18.00 | $19.50 | $29.50 | $35.50 |
| | 75/ | 81/3 | 122/11 | 147/11 |

Iron, 55%; Brass Cylinder, 50%.

| Fig. 442. | No. 0 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Iron | $18.00 | $19.00 | $20.00 | $22.00 | $26.00 | $28.50 |
| | 75/ | 79/2 | 83/4 | 91/8 | 108/4 | 118/9 |
| Brass cyl | $27.00 | $28.00 | $29.00 | $33.00 | $33.00 | $37.50 |
| | 112/6 | 116/8 | 120/10 | 125/ | 137/6 | 156/3 |
| Brass | $35.00 | $37.00 | $40.00 | $42.00 | $49.00 | $56.00 |
| | 145/10 | 154/2 | 166/8 | 175/ | 204/2 | 233/4 |

Iron, 50%; Brass and Brass Cylinder, 45%.

Fig. 892.

Fig. 236.

Fig. 888.

Fig. 898—Suction and Force Pump, with Crank Shaft and Fly-Wheel.

No. 2—$20.50, 85/5 No. 4—$22.50, 93/9. 50%.

Fig. 236.

Standard, complete, 1½-in. pipe, $10.00, 41/8. 55%.

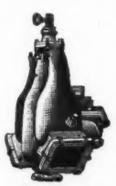
Fig. 888—Combined Hand and Power Pumping Apparatus, with Gear and Pinion.

No. 1—$70.00, 291/8. 40%.

For Cylinders, see catalogue on application.

## Pulsometer Pump.

| No. | Height. | Space occupied. In. | Size of steam pipe | Size of suction pipe. | Size of discharge pipe. |
|---|---|---|---|---|---|
| 1 | 14 in. | 9 × 7 | ⅛ in. | 1 in. | 1 in. |
| 2 | 20 " | 15 × 12 | ¼ " | 1½ " | 1½ " |
| 3 | 23 " | 17 × 14 | ⅜ " | 2 " | 2 " |
| 4 | 30 " | 21 × 16 | ½ " | 2½ " | 2½ " |
| 5 | 34 " | 24 × 20 | ½ " | 3 " | 3 " |
| 6 | 40 " | 28 × 22 | ¾ " | 3½ " | 3½ " |
| 7 | 43 " | 30 × 24 | ¾ " | 4 " | 4 " |
| 8 | 54 " | 33 × 29 | 1 " | 5 " | 5 " |
| 9 | 61 " | 37 × 31 | 1¼ " | 7 " | 6 " |
| 10 | 80 " | 52 × 45 | 2 " | 8 " | 8 " |



| Gal. per minute. | Weight. | Net price. | Size boiler. |
|---|---|---|---|
| 10 | 35 | $50 | . . . . |
| 20 | 125 | 75 | 3 |
| 60 | 210 | 100 | 5 |
| 100 | 355 | 150 | 6 |
| 175 | 475 | 175 | 8 |
| 300 | 695 | 225 | 12 |
| 425 | 850 | 275 | 15 |
| 700 | 1,600 | 400 | 20 |
| 1,000 | 2,000 | 500 | 3 |
| 2,000 | 5,000 | 1,000 | 40 |

## Rat Traps.

1 doz. in box.

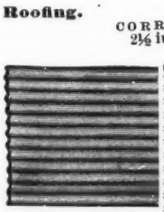
1 gross in case.

$30 per gross.

Dis. 50 and 10%.

## Roofing.

CORRUGATED IRON.
2½ inch corrugations.



| Gauge. | Per square. |
|---|---|
| No. 18, painted red | $9.10 |
| No. 20, " " | 7.60 |
| No. 22, " " | 6.50 |
| No. 24, " " | 5.35 |
| No. 26, " " | 4.65 |
| No. 27, " " | 4.35 |
| No. 28, " " | 4.00 |
| No. 18, galvanized | 13.30 |
| No. 20, " | 10.60 |
| No. 22, " | 9.10 |
| No. 24, " | 7.45 |
| No. 26, galvanized | 7.05 |
| No. 27, " | 6.95 |
| No. 28 " | 6.75 |

Dis., 10%. F. o. b. N. Y.

## Railroad Dumping Cars and Carts.

| Cars. | Gauge. | Cap. | Net | Cap. | Net | Cap. | Net. |
|---|---|---|---|---|---|---|---|
| Side Dumping | 24" | 1 c. y. | $55 | 2 c. y. | $65 | 3 c. y. | $75* |
| End " | " | " | 55 | " | 65 | " | 75* |
| Revolving " | " | " | 70 | " | 80 | " | 90* |
| Bottom " | " | " | 80 | " | 90 | " | 100* |
| Tunnel. | " | " | 55 | " | 65 | " | 75* |
| Mine | " | " | 50 | " | 60 | " | 70* |
| Plantation | 30" | | 43 | | | | |
| Logging. | 36" | | 170 | | | | |
| " | 4' 8½" | | 185 | | | | |
| Hand | 36" | | 45 | | | | |
| " | 4' 8½" | | 50 | | | | |
| Push | 36" | | 40 | | | | |
| " | 4' 8½" | | 45 | | | | |
| R.R. Construction | 36" | | 60 | | | | |
| " | 4' 8½" | | 65 | | | | |
| Carts. | | | | | | | |
| Plantation and Railroad | | | 45 to 75 | | | | |
| Wagons. | | | | | | | |
| McEwen Patent Dumping | | 1 " | 175 | 1½ " | 200 | | |

*These cars built of any gauge from 18" to 56½' and of any capacity from ⅛ to 6 cu. yd.

## Sash Chains.

No. A. "Giant" metal, 15c. ft., wts. not over 125 lbs.

No. 1. "Giant" metal, 12c. pr. ft., wts. not over 75 lbs.

No. 2. "Giant" metal, 10c. pr. ft., wts. not over 40 lbs.

No. 0. "Giant" metal, 8c. pr. ft., wts. not over 25 lbs.

No. 1. Red metal, 10c. pr. ft. wts. not over 40 lbs.

No. 2. Red metal, 8c. pr. ft., wts. not over 30 lbs.

No. 0. Red metal, 6c. pr. ft. wts. not over 15 lbs.

No. 1. Steel, 8c. pr. ft., wts. not 75 lbs.

No. 2. Steel, 6c. pr. ft., wts. not over 30 lbs.

No. 0. Steel, 4c. pr. ft., wts. not over 15 lbs.

No. 1. Steel, black enameled, 9c. pr. ft., wts. not over 75 lbs.

No. 2. Steel, black enameled, 7c. pr. ft., wts. not over 30 lbs.

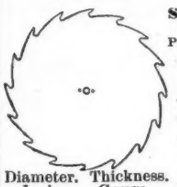
No. 0. Steel, black ena'd, 5c. pr. ft., wts. not over 15 lbs.

Fastenings for hanging a window of 2 sashes for Nos. 1 and 2 chains, consisting of 4 hooks, 4 rings, 4 sash irons, a set, 18c. per set.

Fastenings for hanging a window of 2 sashes for No. 0 chains, 14c. per set.

| | | | | |
|---|---|---|---|---|
| Dis. on "Giant" metal chain | 40 | 10 | 10% | |
| " " Red metal chain | 40 | 10 | 10 | 10% |
| " " Steel " | 40 | 10 | 10 | 10% |
| " " Fastenings | 40 | 10 | 10% | |

## Saws.



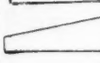
PATENT GROUND AND TEMPERED SOLID TOOTH CIRCULAR SAWS.

| Diameter. Inch. | Thickness. Gauge. | Size of hole—Inch. | Price each. | Extra for each additional gauge, heavier. | Prices for beveling new saws (grinding or beveling old saws, extra).—Per gauge. |
|---|---|---|---|---|---|
| 1 | 24 | ⅜ | $0.50 | $0.01 | $0.06 |
| 2 | 23 | ⅜ | .60 | .01½ | .08 |
| 3 | 21 | ½ | .70 | .02½ | .10 |
| 4 | 19 | ¾ | .90 | .03 | .14 |
| 6 | 18 | ¾ | 1.30 | .05 | .18 |
| 8 | 18 | ⅞ | 1.75 | .08 | .22 |
| 10 | 16 | 1 | 2.30 | .12 | .28 |
| 12 | 15 | 1 | 3.00 | .17 | .35 |
| 16 | 14 | 1⅛ | 5.50 | .25 | .50 |
| 20 | 13 | 1 5-16 | 8.50 | .35 | .70 |
| 24 | 11 | 1⅜ | 12.00 | .55 | .90 |
| 28 | 10 | 1½ | 16.00 | .80 | 1.20 |
| 32 | 10 | 1⅝ | 20.00 | 1.00 | 1.40 |
| 36 | 9 | 1⅝ | 25.50 | 1.40 | 1.70 |
| 40 | 9 | 2 | 35.00 | 2.00 | 2.00 |
| 44 | 8 | 2 | 52.50 | 3.00 | 2.40 |
| 48 | 8 | 2 | 70.00 | 4.00 | 2.80 |
| 52 | 7 | 2 | 90.00 | 5.00 | 3.25 |
| 56 | 7 | 2 | 115.00 | 7.00 | 3.75 |
| 60 | 6 | 2 | 145.00 | 9.00 | 4.25 |
| 64 | 6 | 2 | 180.00 | 12.00 | 5.00 |
| 68 | 5 | 2 | 225.00 | 18.00 | 5.75 |
| 72 | 5 | 2 | 290.00 | 24.00 | 6.55 |
| 76 | 5 | 2 | 375.00 | 30.00 | 7.50 |

Circular saws to cut metal or ivory, 50% advance. No extra charge for saws one gauge thicker than list. Circular saws beveled one gauge without extra charge up to 44 inches; 44 inches and larger, beveled two gauges without extra charge. Dis., 45%.

Hand—London Spring Steel four brass screws.
26 in. $30.00 per doz. Dis., 20%.

Hand—Skew Back Saw, Apple Handle; 5 screw.
26 in. $22.00 per doz.



Hand—Grained Blade, Beec handle, polished edge; 4 screws.
26 in. $20.00 per doz.
Dis., 20%.

One man Cross-Cut—Supplementary Handle.
3 ft. 3½ft. 4 ft. 4½ ft. 5 ft. 5½ ft. 6 ft.
Great American, $2.75 $3.00 $3.50 $4.00 $4.50 $5.00 $5.50
Champion Tooth, 2.35 2.60 3.15 3.50 3.85 4.25 4.65
One man cross cut handles, $4.50 per doz. Dis., 45%.

**Saw Set.**

Adjustable ball and socket saw clamp,

Japanned, $14 per doz.

**Scales.**—Discount on scales, 50, 10 and 5 per cent.

Postal scales.
No. 1, capacity ½ to 9 oz. $3.00.
No. 2, capacity ½ to 12 oz. $4.00.
No. 3, capacity ½ to 34 oz. $6.00
No. 4, capacity ½ oz. to lbs., $8.00

Butter Trip Scales, slab, weights and scoop.

| | | | | |
|---|---|---|---|---|
| No. 7, ½ oz. to 10 lbs., | 10 in. | slab, | without side beam | $10.50 |
| " " " | " | " | with " | 11.50 |
| " 8 " | " 20 lbs., | 12 in. | " without " | 12.50 |
| " " " | " | " | " " | 13.50 |

Tea Scales—All Seamless Scoops.

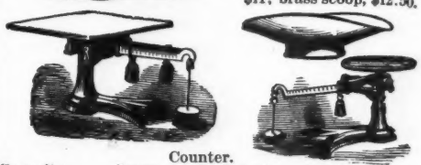
| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| ¼ oz. to 10 lbs. | Tin ..$8.00 | ⅛ oz. to 10 lbs. | Brass .. 9.00 |

Druggists.

| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| 1-16 oz. to 8 lbs. | Tin ..$10.00 | 1-16 oz. to 8 lbs. | Brass..$11.00 |

Even balance trip scales, seamless scoop, with weights.

No. 1, capacity ½ oz. to 2 lbs., tin scoop, $5.50 brass scoop, $6.50.
No. 2, capacity ½ oz. to 4 lbs., tin scoop, $6.50; brass scoop, $7.50.
No. 2½, capacity ½ oz. to 18 lbs , tin scoop, $11; brass scoop, $12.50.



Counter.

| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| ½ oz. to 36 lbs. | Tin ..$10.00 | ½ oz. to 36 lbs. | Brass..$12.00 |

Grocer.

| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| ½ oz. to 62 lbs. | Tin ... $12.00 | ½ oz. to 62 lbs. | Brass..$14.00 |

Meat or Butter Scales, with Slab.

| | | |
|---|---|---|
| ½ oz. to 62 lbs., | with Single Beam | $14.00 |
| " " " | Double " | 15.00 |

Patent Boston platform, 13½ in. long by 10 in. wide.

Pillar, 18 in. high, double beam, marked both sides.

With large seamless tin scoop, $25.00
" " " brass " 27.00

Platform scales. Without Wheels.

| No. | Capacity. | Platform. | Price. |
|---|---|---|---|
| | 400 lbs. | 21½ by 15 inches. | $23.00 |
| | 600 lbs. | 25 by 16 " | 30.00 |
| | 800 lbs. | 25 by 17 " | 34.00 |
| | 1,000 lbs. | 26 by 17 " | 39.00 |
| | 1,200 lbs. | 28 by 20 " | 45.00 |
| | 1,600 lbs. | 29 by 21 " | 55.00 |
| | 2,000 lbs. | 32 by 23 " | 70.00 |

With Wheels.

| No. | Capacity. | Platform. | Price. |
|---|---|---|---|
| 1 | 400 lbs. | 21½ by 15 inches. | $25.00 |
| 2 | 600 lbs. | 25 by 16 " | 33.00 |
| 3 | 800 lbs. | 25 by 17 " | 38.00 |
| 4 | 1,000 lbs. | 26 by 17 " | 43.00 |
| 5 | 1,200 lbs. | 28 by 20 " | 49.00 |
| 6. | 1,600 lbs. | 29 by 21 " | 60.00 |
| 7 | 2,000 lbs. | 32 by 23 " | 75.00 |

Brass sliding poise at same price if so specified in order

| No. | With Wheels and Drop Lever. Capacity. | Platform. | Price. |
|---|---|---|---|
| 4 | 1,000 lbs. | 26 by 17 inches. | $51.00 |
| 5 | 1,200 lbs. | 28 by 20 " | 59.00 |
| 6 | 1,600 lbs. | 29 by 21 " | 70.00 |
| 7 | 2,000 lbs. | 32 by 23 " | 82.00 |
| 8 | 2,500 lbs. | 33¼ by 24¾ " | 94.00 |
| 9 | 3 000 lbs. | 38 by 30 " | 125.00 |

**Shears.** The Patent "Eureka

No. 1 cuts round metal up to ¼ in. steel to ⅛, $12.

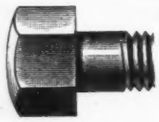
No. 2 cuts round metal up to ⅛ in., steel to 3-16, $20.

Discount, 25%.

**Steel Wire Mats.**

| Galvanized Steel Wire. | | (Style A) "Hartman Flexible." |
|---|---|---|
| No. 2. | Size 16x24. | Each . $1.50 |
| No. 3. | " 18x30. | " .... 2.00 |
| No. 4. | " 22x36. | " .... 3.00 |
| No. 5. | " 26x48. | " .... 4.50 |
| No. 6. | " 30x48. | " .... 5.25 |
| No. 7. | " 36x48. | " .... 6.50 |
| No. 8. | " 36x60. | " .... 8.00 |
| No. 9. | " 36x72. | " ....10.00 |

Brass mats "list" double the price of galvanized Style A) for similar sizes.
3 doz. lots, dis. 33⅓%.
6 doz. lots, dis. 40%.
12 doz. lots. dis. 40 and 5%.



**Screws.**

STEEL SCREWS ADD 50% TO LIST.
Prices are per 100.
Hexagon Cap Screws.
Heads on Steam-tight Screws not polished, unless so ordered. Can make these 12 inches long.

| Diam. head. | 7-16 | ½ | 9-16 | ⅝ | ¾ | 13-16 | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Length head. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1½ |
| Diam. screw. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | | 1⅛ |
| ¾ | 3.00 | 3.25 | 3.75 | 4.40 | 5.50 | 7.00 | | | | | |
| 1 | 3.25 | 3.50 | 4.00 | 4.70 | 5.70 | 7.00 | 9.50 | | | | |
| 1¼ | 3.50 | 3.75 | 4.25 | 5.00 | 6.00 | 7.50 | 9.50 | 12.20 | | | |
| 1½ | 3.75 | 4.00 | 4.50 | 5.30 | 6.30 | 8.00 | 10.00 | 12.20 | 16.00 | | |
| 1¾ | 4.00 | 4.25 | 4.75 | 5.60 | 6.60 | 8.50 | 10.60 | 12.80 | 16.60 | 21.20 | |
| 2 | 4.25 | 4.60 | 5.05 | 5.95 | 7.00 | 9.10 | 11.20 | 13.40 | 17.20 | 22.30 | 29.00 |
| 2¼ | | 5.00 | 5.40 | 6.35 | 7.50 | 9.70 | 11.90 | 14.10 | 17.90 | 23.60 | 30.50 |
| 2½ | | | 5.80 | 6.80 | 8.00 | 10.40 | 12.70 | 14.90 | 18.80 | 25.10 | 32.30 |
| 2¾ | | | | 7.30 | 8.60 | 11.20 | 13.60 | 15.90 | 20.00 | 26.90 | 34.40 |
| 3 | | | | | 9.30 | 12.10 | 14.70 | 17.00 | 21.80 | 29.00 | 37.00 |
| Thread to in. | 20 | 18 | 16 | 14 | 12 | 12 | 11 | 10 | 9 | 8 | 7 |
| Add for each ¼ in. | 30 | 40 | 50 | 60 | 80 | 1.00 | 1.30 | 1.60 | 2.00 | 2.40 | 3.00 |

Dis., heads ground, 60 and 10%; dis., heads black, 60, 10 and 5%; dis., heads extra finish, 50 and 10%; dis., heads case-hardened, 55% and 10 dis.; dis., heads polished after hardening. 45 and 10%.

SQUARE CAP SCREWS.

| Diam. head. | ⅜ | 7-16 | ½ | 9-16 | ⅝ | 11/16 | ¾ | ⅞ | 1⅛ | 1¼ | 1⅜ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Length head. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1⅛ |
| Diam screw. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1⅛ |
| ¾ | 2.40 | 2.75 | 3.20 | 3.80 | 4.40 | 5.75 | | | | | |
| 1 | 2.60 | 2.95 | 3.40 | 4.00 | 4.70 | 5.75 | 7.70 | | | | |
| 1¼ | 2.75 | 3.10 | 3.65 | 4.20 | 4.95 | 6.05 | 7.70 | 10.50 | | | |
| 1½ | 2.90 | 3.30 | 3.85 | 4.45 | 5.25 | 6.35 | 8.25 | 10.50 | 14.00 | | |
| 1¾ | 3.05 | 3.50 | 4.10 | 4.70 | 5.55 | 6.65 | 8.80 | 11.10 | 14.80 | 18.00 | |
| 2 | 3.25 | 3.70 | 4.35 | 4.95 | 5.90 | 7.05 | 9.40 | 11.80 | 15.70 | 19.00 | 22.50 |
| 2¼ | | 4.00 | 4.65 | 5.25 | 6.30 | 7.55 | 10.10 | 12.60 | 16.70 | 20.20 | 24.00 |
| 2½ | | | 5.00 | 5.60 | 6.75 | 8.15 | 10.90 | 13.50 | 17.80 | 21.50 | 25.80 |
| 2¾ | | | | 6.00 | 7.25 | 8.85 | 11.80 | 14.60 | 19.10 | 23.10 | 27.90 |
| 3 | | | | | 7.80 | 9.65 | 12.80 | 15.90 | 20.60 | 25.00 | 30.50 |
| Thread to in. | 20 | 18 | 16 | 14 | 12 | 12 | 11 | 10 | 9 | 8 | 7 |
| Add for each ¼ in. | 25 | 35 | 45 | 55 | 65 | 90 | 1 20 | 1.50 | 1.80 | 2.30 | 3.00 |

Dis., heads ground, 65 and 10%; dis., heads black, 65, 5 and 5%; dis., heads extra finish, 55 and 10%; dis., head case hardened. 60 and 10%; dis., heads polished-hardened, 50 and 10%.

MILLED HEADS, COLLAR SCREWS
25 and 10% discount.

| Diameter of Collar. | ¼ | 11/32 | 7/16 | ½ | 9/16 | 11/16 | 13/16 | ⅞ | 1 | 1¼ |
|---|---|---|---|---|---|---|---|---|---|---|
| Diameter of Screw. | ⅛ | 3/16 | ¼ | 5/16 | ⅜ | 7/16 | ½ | ⅝ | ¾ | ⅞ |
| Length under Hea to Point, ¾ | 2.50 | 2.80 | 3.10 | 3.75 | 4.40 | 5.00 | 6.25 | | | |
| 1 | 2.80 | 3.10 | 3.40 | 4.05 | 4.70 | 5.30 | 6.60 | 8.25 | | |
| 1¼ | 3.10 | 3 40 | 3.70 | 4.35 | 5.00 | 5.60 | 7.00 | 8.60 | 11.25 | |
| 1½ | 3.45 | 3.70 | 4 00 | 4.70 | 5.30 | 5.95 | 7.40 | 9.00 | 11.90 | 15.00 |
| 1¾ | | 4.05 | 4.35 | 5.05 | 5.65 | 6.35 | 7.80 | 9.45 | 12.60 | 15.60 |
| 2 | | | 4.70 | 5.45 | 6.25 | 6.85 | 8.40 | 10.00 | 13.35 | 16.25 |
| 2¼ | | | | 5.95 | 6.85 | 7.40 | 9.00 | 10.60 | 14.15 | 17.10 |
| 2½ | | | | | 7.50 | 8.10 | 9.60 | 11.25 | 15.00 | 18.00 |
| 2¾ | | | | | | 8.75 | 10.30 | 11.90 | 15.90 | 19.00 |
| 3 | | | | | | | 11.00 | 12.60 | 16.85 | 20.00 |
| Threads to inch | 40 | 30 | 20 | 18 | 16 | 14 | 12 or 13 | 12 | 11 | 10 |
| Add for each ¼ inch | 30 | 40 | 50 | 60 | 80 | 1.00 | 1.30 | 1.60 | 2.00 | 2.40 |

MILLED FROM SOLID BAR.

| | Fillister. | | | Bevel Head. | | | | Button Head | |
|---|---|---|---|---|---|---|---|---|---|
| Diam. Head | 3-16 | ¼ | ⅜ | 7-16 | 9-16 | ⅝ | ¾ | 13-16 | ⅞ | 1 |
| Length Head | ⅛ | 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ |
| Diam. Screw | ⅛ | 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ |
| ¾ | 2.00 | 2.25 | 2.50 | 3.00 | 3.50 | 4.00 | 5.00 | | | |
| 1 | 2 25 | 2.50 | 2.75 | 3.25 | 3.75 | 4.25 | 5.30 | 6.60 | | |
| 1¼ | 2.50 | 2.75 | 3.00 | 3.50 | 4.00 | 4.50 | 5.60 | 6.90 | 9.00 | |
| 1½ | 2.75 | 3.00 | 3.25 | 3.75 | 4.25 | 4.75 | 5.90 | 7.20 | 9.50 | 12.00 |
| 1¾ | | 3.25 | 3.50 | 4.00 | 4.50 | 5.00 | 6.20 | 7.50 | 10.00 | 12.50 |
| 2 | | | 3.75 | 4.35 | 5.00 | 5.50 | 6.75 | 8.00 | 10.75 | 13.00 |
| 2¼ | | | | 4.75 | 5.50 | 6.00 | 7.25 | 8.50 | 11.50 | 13.75 |
| 2½ | | | | | 6.00 | 6.50 | 7.75 | 9.00 | 12.00 | 14.50 |
| 2¾ | | | | | | 7.00 | 8.25 | 9.50 | 12.75 | 15 25 |
| 3 | | | | | | | 8.75 | 10.00 | 13.50 | 16.00 |
| Threads to inch. | 40 | 30 | 20 | 18 | 16 | 14 | 12 | 12 | 11 | 10 |

Head on Bevel and Button Head Screws, 1-16 larger in diameter than above specifications.
Price, according to size of head.
Discount, 50 and 10%; case hardened, 45 and 10%; case hardened and polished, 35 and 10%.

**Spades and Shovels.**

JONES

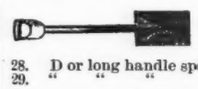
Patent plain black solid cast-steel shovels and spades.

Patent solid steel shovel.

| No. | | No. | Per Doz. Black. | Per Doz. Pol's'd |
|---|---|---|---|---|
| 20. | D. or long handle sq.-point shovels. | 2 | $15.50 | $16.50 |
| 21. | " " " " " | 3 | 16.25 | 17.25 |
| 22. | " " " " " | 4 | 17.00 | 18.50 |
| 23. | " " " " " | 6 | 17.50 | 19.00 |
| 24. | " " " " charcoal. | 8 | 20.50 | 22.0 0 |

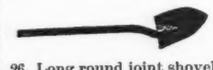
Pt. plain back solid cast steel shovel.

| | | | |
|---|---|---|---|
| 25. | D or long handle round-point shovels. | 3 | 16. 5 17.25 |



Patent solid cast steel spade.

| | | | |
|---|---|---|---|
| 28. | D or long handle spades..... | 2 | 6.00 17.00 |
| 29. | " " " " ..... | 3 | 16.50 18.0 0 |



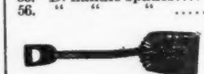
Patent plain back solid cast steel.

| | | | |
|---|---|---|---|
| 26. | Long round joint shovel No. 2..... | | 15.50 16.50 |
| 27. | " square " " No. 2 ..... | | 15.50 16.50 |
| 32. | D. handle square-point molders' shovels..... | 2 | ..... 17.00 |
| 33. | D. handle square point railroad, extra heavy..... | 2 | 15.75 |
| 34. | D. handle round point railroad, extra heavy ..... | 3 | 16.50 |
| 35. | L. handle round point shovel, with foot cap..... | 2 | 16.00 17.00 |

GRAY'S CAST.

Patent plain back solid-steel shovels and spades.

| | | | | |
|---|---|---|---|---|
| 50. | D. or long handle sq.-point shovels. | 2 | $12.00 | $13.00 |
| 51. | " " " " " | 3 | 12.75 | 14.00 |
| 52. | " " " round point " | 3 | 12.75 | 14.00 |
| 55. | D. handle spades..... | 2 | 12.25 | 13.25 |
| 56. | " " " ..... | 3 | 13.00 | 14.25 |



Patent solid corrugated cast steel scoop.

SCOOPS.

Jones' patent plain back solid corrugated cast steel scoops.

| | | | | |
|---|---|---|---|---|
| 90. | D. or long handle solid cast ste l... | 2 | $13.50 | $14.50 |
| 91. | " " " " " ... | 4 | 14.50 | 15.50 |
| 91½. | " " " " " ... | 6 | 16.50 | 17.50 |

Jones' riveted scoops.

| | | | | |
|---|---|---|---|---|
| 92. | Cast steel D. or long handle... ....2 | | 13.50 | 14.50 |
| 93. | " " " " .....4 | | 14.50 | 15.50 |
| 94. | " " " " .....6 | | 16.50 | 17.50 |
| | | | Half polished. | |
| 95. | " " " .....8 | | | $20.00 |
| 96. | " " " .....10 | | | 22.50 |
| 97. | " " " Loco-motive or coal (heavy).....6 | | 17.50 | |
| 98. | " Long or D. handle for salt heavy)..... | | 17.50 | |
| 99. | " D. handle flour and house furnace..... | | 10.50 | |
| 100. | " D. handle r'd-pt. for coal (extra heavy).....6 | | 20.00 | |
| 101. | " ash pit, furnace L. han-dle.....2 | | Polished. | 13.00 |
| 102. | " " 32 in. D..2 | | | 13.50 |
| 103. | " " " 42 " iron D. handle.....2 | | | 14.00 |

Ditching spade.

| | | | |
|---|---|---|---|
| 124. | D handle ditching (flat)..... | 18.00 | 19.50 |
| 125. | D handle post hole (concave)..... | 18.00 | 19.50 |
| 126. | D handle Alcock (for clay and brick)....16.00 | | 17.00 |

Discount on shovels and spades, 50 and 10.
" " scoops, 50.
Boxed f.o.b. New York, Boston or Montreal.
The solid shovels, spades and scoops are made from cast steel bars by a recently patented process, the blade and strap being in one piece, not welded. All goods are American patterns.

**Stencil Inks.**

Black.

| No. | Per can. | Per cake. | No. | Per can. | Per cake. |
|---|---|---|---|---|---|
| 1..... | 7 cents | 3 cents | 3.....20 cents. | | 12 cents |
| 2.....10 | " | 5 " | 4.....30 | " | 20 " |

Blue.

| | | | | | |
|---|---|---|---|---|---|
| .....10 cents. | | 6 cents | 3.....30 cents. | | 22 cents |
| .....15 | " | 9 " | 4.....50 | " | 40 " |

Red and Green.

| | | | | | |
|---|---|---|---|---|---|
| 1.....12 cents | | 8 cents | 3 .....50 cents. | | 42 cents |
| 2.....20 | " | 15 " | 4.....90 | " | 80 " |

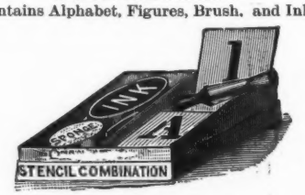
Per doz. cans or cakes. net, per gross, 20% less.

Indelible Ink.

| | | |
|---|---|---|
| Small bottles per | 100 | $2.75 |
| " " | 500 | 12.00 |
| " " | 1,000 | 20.00 |

STENCIL COMBINATIONS.

Contains Alphabet, Figures, Brush, and Ink.




| | | |
|---|---|---|
| ½ inch, per doz | | $4.80 |
| ¾ " " | | 5.40 |
| 1 " " | | 5.40 |
| 1¼ " " | | 7 50 |
| 1½ " " | | 8.40 |
| 1¾ " " | | 10.00 |
| 2 " " | | 10.00 |
| 2½ " " | | 15.00 |

Dis., 20%.

**Tools.** ARTISANS.

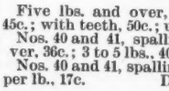
Chisel (Mason).

Stone, 5 and 8c. lb., net.

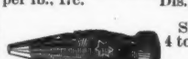
Mill Picks.
Cast steel, 2 to 3 lb. $22 per doz.
Dis., 60 and 5%

Stone Axes, Cast Steel.
All sizes, 50c. per lb.
Dis., 70 and 10%.

Five lbs. and over, 40c.; with teeth, 45c.; 3 to 5 lbs., 45c.; with teeth, 50c.; under 3 lbs., 50c.; with teeth, 55c.
Nos. 40 and 41, spalling or stone hammer, 5 lbs. and ver, 36c.; 3 to 5 lbs., 40c.; under 3 lbs., 45c. per lb.
Nos. 40 and 41, spalling hammers, 9 to 20 lbs., steel face per lb., 17c. Dis., 70 and 10%



Ship or Top Mauls, Steel Face 4 to 8 lbs., 28c. per lb.
Dis., 50, 10 and 5%.



Steel Wedges, wood, 1s qual., 5c. lb.

Cooper Frees.

| | | |
|---|---|---|
| 8 in.. | ₰ doz. | $13.0 |
| 10 in.. | ₰ doz. | 13.5 |
| 12 in.. | ₰ doz. | 14.00 |
| 14 in.. | ₰ doz. | 14.56 |
| 16 in .. | ₰ doz. | 15.00 |

Discount, 60%.

…0 days, 2% 10 days.

Vise.

No 1. Solid Box Vises.

| | Each. |
|---|---|
| No. 25, 3½ in. Jaw | $12.00 |
| " 30, 3½ " | 11.00 |
| " 55, 3⅝ " | 10.00 |
| " 40, 4 " | 10.50 |
| " 45, 4¼ " | 11.00 |
| " 50, 4¼ " | 11.50 |
| " 55, 4½ " | 12.00 |
| " 60, 4½ " | 13.00 |
| " 65, 4¾ " | 14.00 |
| " 70, 5 " | 15.00 |
| " 75, 5 " | 16.00 |
| " 80, 5¼ " | 17.50 |
| " 85, 5¼ " | 18.50 |
| " 90, 5½ " | 20.00 |
| " 95, 5¾ " | 21.00 |
| " 100, 6 " | 22.00 |
| " 105, 6 " | 23.00 |
| " 110, 6¼ " | 24.00 |
| " 115, 6¼ " | 25.00 |
| " 120, 6½ " | 26.00 |
| " 125, 6½ " | 27.50 |
| " 130, 6¾ " | 29.00 |

| | Each. |
|---|---|
| No. 135, 6¾ in. Jaw | $31.50 |
| " 140, 7 " | 33.00 |
| " 145, 7 " | 35.00 |
| " 150, 7 " | 36.00 |
| " 155, 7¼ " | 41.50 |
| " 170, 7¼ in. Jaw | $44.50 |
| " 180, 8 " | 47.00 |
| " 190, 8 " | 53.00 |
| " 200, 8 " | 56.00 |

Dis., 60 and 10%.

MINERS.

Adze Eye Coal Picks.
Same list and dis. as No. 16.

Anthracite Coal Picks.
Same list and dis. as No. 16.

Stone Picks, per doz.
No. 18, 6 to 7 lbs...$16.50.
No. 18, 7 to 8 lbs... 17.50.
No. 18, 8 to 9 lbs... 18.50.
Dis., 60 and 10%.

Coal Picks.

| No. | | Per doz. |
|---|---|---|
| 16, Weight, 2 | lbs. | $8.50 |
| 16, " | 2½ " | 9.00 |
| 16, " | 3 " | 9.50 |
| 16, " | 3½ " | 10.00 |
| 16, " | 4 " | 10.50 |
| 16, " | 4½ " | 11.00 |
| 16, " | 5 " | 11.50 |
| 16, " | 5½ " | 12.00 |
| 16, " | 6 " | 12.50 |
| 16, " | 6½ " | 13.00 |
| 16, " | 7 " | 14.00 |

Packages chiarged at cost. Dis., 60, 10%.

Adze Eye Miners Picks—Surface, Drifting and Poll.

| No. | | | Per doz. |
|---|---|---|---|
| 19, Surface. | No. 1, 4 | lbs. | $14.00 |
| 19, " | No. 2, 4½ | " | 15.00 |
| 19, " | No. 3, 5 | " | 16.00 |
| 19, " | No. 4, 5½ | " | 17.00 |
| 19, " | No. 5, 6 | " | 18.00 |
| 19, " | No. 6, 6½ | " | 19.00 |
| 19, " | No. 7, 7 | " | 20.00 |
| 20, Drifting, | No. 1, 3 | " | 12.50 |
| 20, " | No. 2, 4 | " | 14.00 |
| 20, " | No. 3, 4½ | " | 15.00 |
| 20, " | No. 4, 5 | " | 16.00 |
| 20, " | No. 5, 6 | " | 17.50 |
| 21, Poll, | No. 1, 3½ | " | 15.00 |
| 21, " | No. 2, 4 | " | 16.00 |
| 21, " | No. 3, 4½ | " | 17.00 |
| 21, " | No. 4, 5 | " | 18.50 |
| 21, " | No. 5, 6 | " | 20.00 |
| 21, " | No. 6, 6¾ | " | 21.50 |

Dis., 60, 10 and 5%.

Tamping Picks.

Adze eye, 6 to 7 lbs., per doz., $17.
Adze eye, 7 to 8 lbs., per doz., $18.
Adze eye, 8 to 9 lbs., per doz., $19.
Hunt eye, 6 to 7 lbs., per doz. $17.
Hunt eye, 7 to 8 lbs., per doz., $18.
Hunt eye, 8 to 9 lbs., per doz., $19.
Dis., 60, 10 and 5%.

Ore Picks.

| No. | | | |
|---|---|---|---|
| 54, Adze Eye, | 5 to 6 | lbs. | ₱ doz. $12.00 |
| 54, " | 6 to 7 | " | " $13.00 |
| 54, " | to 8 | " | " $14.00 |

56, Steel Lake Superior Mining Picks.

(Special Price and Quality.)

Dis, 60, 10 and 5%.

Steel Face Hammers.

No. 43, hand drilling hammer, 2 to 5 lbs.; No. 45, napping hammers, 2 to 5 lbs.; No. 39, mason hammers, 3 to 8 lbs.; No. 42, smiths' hand hammers, 2 to 5 lbs.; No. 44, smiths' striking hammers, 2 to 5 lbs., all steel face, per lb., 26c. Dis., 70, 10 and 5%.

No. 43, hand drilling hammer, 5 lbs. and over, 36c.; 3 to 4 lbs., 40c.; under 3 lbs., 45c. per lb.
Dis., 70, 10 and 5%.

Cast Steel.

No. 42, blacksmiths hand hammer, 5 lbs. and over 30c.; 3 to 5 lbs., 34c.; under 3 lbs., 45c. per lb.
No. 44, drilling or striking hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 45, napping hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 35c, under 3 lbs., 45c. per lb.
Dis., 70 and 10% 5.

Steel Face Sledges.

No. 34. Smiths' sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 35. Stone sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 36. Striking sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 37. Coal sledges, 5 to 10 lbs., steel face, 18c. per lb.

Cast Steel Sledges.

No. 34. Blacksmiths' sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 35. Stone sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 36. Striking sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 37. Coal sledge, 5 lbs. and over, 30c.; 3 to 5 lbs. 36c.; under 3 lbs., 45c. per lb.

RAILROADS.

Railway Track Punch

Round Point.
15c. lb., net.

Tr…k Wrench.

7¾ lb., net.

Ra… Fork.

9c. lb. …et.

Crow Bars,
Wedge Points,
3½c. lb., net.
Pinch Point,
3 ½c. lb., net.

65 Tamping Bar,
6c. lb., net.

66 Claw Bar,
7c. lb., net.

Railroad Spike Mauls
6 to 16 lbs., Steel Face
18c. lb.
Dis., 50, 10, and 5%.

Steel Track Chisel,
15c. per lb., net.

Railroad or Clay Picks.

| No. | | | Per doz. |
|---|---|---|---|
| 11, Adze eye, | 4 to 5 | lbs. | $11.00 |
| 11, " | 5 to 6 | " | 12.00 |
| 11, " | 6 to 7 | " | 13.00 |
| 11, " | 7 to 8 | " | 14.00 |
| 11, " | 8 to 9 | " | 16.00 |
| 11, " | 9 to 10 | " | 18.00 |
| 12, Hunt eye, | 4 to 5 | " | 11.00 |
| 12, " | 5 to 6 | " | 12.00 |
| 12, " | 6 to 7 | " | 13.00 |
| 12, " | 7 to 8 | " | 14.00 |

Dis., 60, 10 and 5%.

Mattocks—Price per doz.

2, Adze Eye, Long Cutter, 6 lbs., $16.00.
3, Adze Eye, Short Cutter, 5½ lbs., $15.50.
2, Adze Eye, Long Cutter, Light, $15.00.
3, Adze Eye, Short Cutter, Light, $15.00.
4, Hunt Eye, Long Cutter, 6 lbs., $16.00.
5, Hunt Eye, Short Cutter 5½ lbs., $15.50.

Adze Eye Pick
Mattocks.....$15.

Hunt Eye Pick
Mattocks.....$16

Dis., 60, 10 and 5%

Grub Hoes.

Western Pattern.
No. 0, 3 lbs., ₱ doz., $10.50.
Western Pattern, No. 1, 3½ lbs., ₱ doz., $11.
Western Pattern
No. 2, 4 lbs., ₱ doz., $11.50.
Western Pattern, No. 3, 4½ lbs., ₱ doz., $12.
Baltimore Pattern, No. 1, 3½ lbs., ₱ doz., $11.
Baltimore Pattern, No. 2, 4½ lbs., ₱ doz., $11.75
Baltimore Pattern, No. 3, 5 lbs., ₱ doz., $12.75.
Baltimore Pattern, No. 4, 5¾ lbs., ₱ doz., $13.75.
Dis., 60 and 10%, 5.

CARPENTERS'.

BEADER (Universal Hand.)

For Beading, Reeding, Fluting, or for light Rou…ering.
No. 66 Iron Stock, with seven Steel Cutters, 1.00.

BOXWOOD RULES.

Two feet, four-fold, 1 inch wide.

| Plate. | Middle. | Edge. | Bound. |
|---|---|---|---|
| Round joint | $4 | ... | ... |
| Square " | 5 | $7 | $15 |
| Arch " | 6 | 8 | 16 |

Two feet, four-fold, 1⅜ inches wide.

| Plate. | Middle. | Edge. | Bound. |
|---|---|---|---|
| Square joint | $7 | $9 | $18 |
| Arch " | 9 | 11 | 20 |

Two feet, two-fold, 1½ inches wide.

| Square joint. | Arch. | Arch Bound. |
|---|---|---|
| $5 | $7 | $16 |
| 12 | 14 | 24 |

Gunter's Slide.
Dis. 80, 10 and 10%.

LEVELS.

| | 10 to 16 in. | 18 to 24 in. |
|---|---|---|
| Arch top plate, 2 side views | $9.00 | $12.00 |

PLUMBS AND LEVELS.

| Arch top plate, 2 side views. | 12 to 18 in. | 18 to 24 in. | 24 to 30 in. |
|---|---|---|---|
| Polished | $14.00 | $16.00 | $18.00 |
| Mahogany | .... | 16.50 | 22.50 |
| Mahogany tp'd and lp'd | 27.00 | ..... | ..... |
| Polished and l…pped | ..... | ..... | 24.00 |
| Polished and tipped | ..... | ..... | 28.00 |
| Polished, lip'd and tip'd | ..... | ..... | 35.00 |

| | in. | |
|---|---|---|
| Mason's level, 2 plumbs, polished, | 36, | $30.00 |
| Mason's level, 2 plumbs, p'd and t'd, | 36, | 36.00 |
| Mason's level, 2 plumbs, polished, | 42, | 36.00 |

PATENT ADJUSTABLE PLUMBS AND LEVEL.

| Arch Top plate, 2 side views | 26 to 30 in. |
|---|---|
| Polished and lipped | $27.00 |
| Polished and tipped | 30.00 |
| Polished, lipped and tipped | 39.00 |
| Mahogany | 27.00 |
| Mahogany, lipped | 33.00 |
| Mahogany, lipped and tipped | 48.00 |
| Polished, triple stock, lipped and tipped | 48.00 |
| Mahogany " " " " | 60.00 |
| Rosewood, lipped and tipped | 90 00 |

Dis., 70, 10, 10%

POCKET LEVELS.

| | |
|---|---|
| Iron top, Japanned | $ 00 |
| Brass top | 3.00 |

Dis., 70, 10, 10%.

BAILEY'S PATENT WOOD PLANES.

| Smooth. | Handle smooth. | |
|---|---|---|
| 9 × 3¾ in. | 8 × 2 in. | 9 × 2 in. |
| $2 | $2 | $2.50 each |

| Jack. | Fore. | Jointer. |
|---|---|---|
| 15 × 2½ in. | 20 × 2⅜ in. | 26 × 2⅝ in. |
| $2.50 | $2.75. | $3.25 each |

Dis., 40, 10 and 10%.

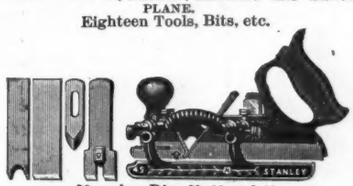
PLANES, BAILEY'S PATENT IRON.

With pat. lateral adjustment.

Smooth, 8 in. × 1¾ in., $3; in. × 2 in., $3.25; 10 in. × 2⅜ in., $3.75 each.
Jack, 14 in. × 2 in., $3.75.
Fore, 18 in. × 2⅜ in., $4.75
Jointer, 2… in. × 2⅜ in., $6.50 each.
Dis., 40, 10 and 10 %.

STANLEY'S BEADING, RABBET, SLITTING AND MATCHING PLANE.

Eighteen Tools, Bits, etc.



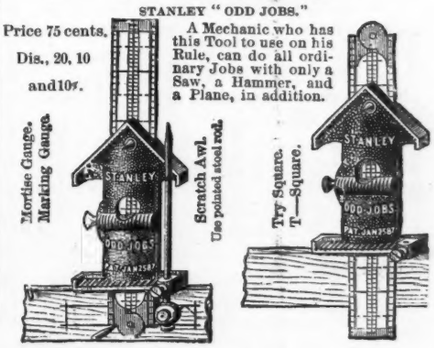
$8 each. Dis., 20, 10 and 10%.

STANLEY "ODD JOBS."

Price 75 cents.

Dis., 20, 10 and 10%.

A Mechanic who has this Tool to use on his Rule, can do all ordinary Jobs with only a Saw, a Hammer, and a Plane, in addition.



STANLEY IRON BLOCK PLANES.

3½ × 1 in. 20c.

5½ × 1¼ 40c.

7½ × 1¾ in. 60c. each

ADJUSTABLE

5½ × 1¼ in. 60c.

7½ × 1¾ in. 85c. each.

Dis., 40, 10 and 10 %

Double Gate Brass Valves.
Gland in packing box.

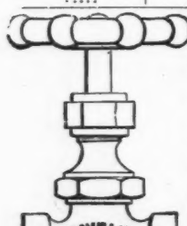
| Size. | Screw socket. | Flange. | Diameter of Standard Flange. | Face to face of Screw socket | Face to face of Flanges. | Extra for slide arm and lever subject to discount. |
|---|---|---|---|---|---|---|
| In. | $ | $ | In. | In. | In. | |
| ½ | 1.25 | ..... | ..... | 2¼ | ..... | $1.00 |
| ¾ | 1.65 | ..... | ..... | 2½ | ..... | 1.00 |
| 1 | 2.15 | ..... | ..... | 2⅞ | ..... | 1.00 |
| 1¼ | 3.15 | ..... | ..... | 3⅜ | ..... | 1.00 |
| 1½ | 4.25 | ..... | ..... | 3¾ | ..... | 1.00 |
| 2 | 6.25 | 11.50 | 6 | 4⅛ | 4⅝ | 1.00 |
| 2½ | 11.50 | 18.00 | 6½ | 4 13-16 | 5⅝ | 1.25 |
| 3 | 16.00 | 22.00 | 7 | 5 | 6¼ | 1.25 |
| 3½ | 21.00 | 31.00 | 7½ | ..... | ..... | 1.25 |
| 4 | 35.00 | 43.00 | 9 | ..... | 7 1-16 | 1.25 |
| 5 | 52.00 | 64.00 | 10 | ..... | ..... | 1.25 |
| 6 | 78.00 | 90.00 | 11 | ..... | 9 | 1.25 |
| 8 | ..... | ..... | ..... | ..... | ..... | ..... |
| 10 | ..... | ..... | ..... | ..... | ..... | ..... |
| 12 | ..... | ..... | ..... | ..... | ..... | ..... |

Rubber-Faced Slide Gate Fire Hydrant.

| Diameter of pipe connection. | Diameter of stand pipe. | Diameter of seat ring. | One 2½ nozzle. | Two 2½ nozzles. | Three 2½ nozzles. |
|---|---|---|---|---|---|
| Inches. | Inches. | Inches. | | | |
| 3 or 4 | 4½ | 3 | $28 | ..... | ..... |
| 3–4–6 | 5¾ | 4 | 31 | $33.00 | $35.00 |
| 4 or 6 | 7 | 5 | ..... | 38.50 | 40.50 |
| 6 or 8 | 8 | 5 | ..... | 49.00 | 51.00 |
| 8 or 10 | 10 | 8 | ..... | ..... | ..... |

| Four 2½ nozzles. | Six 2½ nozzles. | One steamer nozzle. | One steamer and one 2½ nozzle. | One steamer and two 2½ nozzles. | Frost case, standard length. |
|---|---|---|---|---|---|
| ..... | ..... | $33.00 | $35.00 | $37.00 | $4.50 |
| ..... | ..... | 38.50 | 40 50 | 42.50 | 5.00 |
| $53.00 | ..... | 49.00 | 51.00 | 53.00 | 6.50 |
| ..... | ..... | ..... | ..... | ..... | 7.50 |

| For each 6 inches more or less than standard length of stand pipe, add or deduct from list. | For each 6 inches more or less than standard length of frost case, add or deduct from list. | Extra charge for hub. | Independent nozzle gates each. |
|---|---|---|---|
| $0.60 | $0.44 | ..... | ..... |
| .75 | .50 | 6 in. $0.50 | $3.50 |
| .85 | .70 | No ch'ge | 3.75 |
| 1.00 | .90 | 8 in. $1.25 | 3.75 |
| ..... | ..... | ..... | 4.50 |

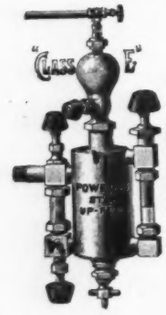



Star Globe, Angle and Check Valves.

| Size, inches. | ⅛ | ¼ | ⅜ | ½ |
|---|---|---|---|---|
| Globe and angle | .80 | .85 | .90 | 1.20 |
| Check V | .70 | .70 | .75 | .95 |
| Size | ¾ | 1 | 1¼ | 1½ |
| Globe and angle | 1.55 | 2.00 | 3 00 | 4.00 |
| Check V | 1.20 | 1.65 | 2.50 | 3.25 |
| Size | 2 | 2½ | 3 | |
| Globe and angle | 6.50 | 12 50 | 19.00 | |
| Check V | 5.00 | 11.00 | 15.00 | |

Dis., 50%,

Also made heavy and extra heavy for special uses.




Star Sight Up-feed Lubricators. Class E.

| Size. | ½ ft. | ½ ft. | 1 ft. |
|---|---|---|---|
| Bronzed | 13.00 | 15.00 | 20.00 |
| Finished | 15.00 | 17.00 | 22.00 |
| Plated | 17.00 | 15.00 | 25.00 |
| | | 1 qt. | ½ gal. |
| Bronzed | | 25.00 | 34.00 |
| Finished | | 28.00 | 38.00 |
| Plated | | 32.00 | 43.00 |

Less 75% discount.

Signal Sight Feed Oiler.

| Numbers. | 0 | 1 | 1½ | 2 |
|---|---|---|---|---|
| Diameter of glass, inches | 1¼ | 1½ | 1¾ | 2 |
| Height of glass, inches | 1½ | 1⅝ | 1⅝ | 1⅞ |
| Capacity | ½ oz. | ¾ oz. | 1 oz. | 2 oz. |
| Size of shank, pipe thread, inches | ¼ | ¼ | ⅜ | ⅜ |
| Signal Sight Feed Oiler, each | $3.00 | $3.25 | $3.50 | $3.75 |
| Signal Sight Feed Oiler, nickel plated, each | 3.50 | 3.75 | 4.00 | 4.25 |
| Numbers | 3 | 4 | 5 | 6 |
| Diameter of glass, inches | 2¼ | 2½ | 3 | 3½ |
| Height of glass, inches | 2½ | 2¼ | 2¾ | 4 |
| Capacity | ¼ pt. | ½ pt. | ½ pt. | 1 pt. |
| Size of shank, pipe thread, inches | ⅜ | ½ | ½ | ½ |
| Signal Sight Feed Oiler, each | $4.25 | $5.25 | $7.25 | $9.25 |
| Signal Sight Feed Oiler, nickel plated, each | 4.75 | 5.75 | 8.00 | 10.25 |

Less 65% dis.

EDDY VALVES.

Class 1. Class 2. Class 3 and 4.

| Class 1. Brass valves, steam metal. Size in inches. | Screw ends. | Flange ends. | Class 2. Iron, brass mounted. Size. | Screw, or flange ends. | Add for S S&L | Class 3. All ir'n for gas. Hub. ends. | Class 4. Water works valves. Hub ends. |
|---|---|---|---|---|---|---|---|
| ½ | $1.30 | ..... | ½ | $7.00 | $1.00 | $8.00 | $10.00 |
| ¾ | 1.70 | ..... | ¾ | 10.50 | 1.30 | ..... | ..... |
| 1 | 2.20 | ..... | 1 | 13.00 | 1.40 | 10.00 | 15.00 |
| 1¼ | 3.20 | ..... | 1¼ | 16.50 | 1.50 | ..... | ..... |
| 1½ | 4.20 | $7.50 | 1½ | 18.00 | 1.70 | 15.00 | 18.00 |
| 2 | 6.20 | 9.00 | 2 | 22.00 | 1.80 | ..... | ..... |
| 2½ | 11.50 | 15.00 | 2½ | 25.00 | 2.00 | 20.00 | 25.00 |
| 3 | 16.00 | 20.00 | 3 | 31.00 | 2.30 | 25.00 | 31.00 |
| 3½ | 22.00 | 28.00 | 3½ | 37.00 | 2.70 | 30.00 | 37.00 |
| 4 | 35.00 | 42.00 | 4 | 45.00 | 3.00 | 35.00 | 45.00 |
| 5 | 50.00 | 60.00 | 5 | 60.00 | 3.50 | 48 00 | 60.00 |
| 6 | 80.00 | 90.00 | 6 | 80.00 | 4.00 | 65.00 | 80.00 |
| 8 | 130.00 | 130 00 | 8 | | | | |

All Iron Valves, Class 2. 10 per cent. less than Brass Mounted.

**Varnish.**

E.S. 1827 & Co.

| For Finishing Coats. | gal. |
|---|---|
| Wearing body varnish | $5.50 |
| Medium drying body | 5.50 |
| One coat coach varnish | 4.50 |
| Wearing carriage | 4.50 |
| Heavy gear varnish | 4.00 |
| Coach body " | 4.00 |
| No. 1 coach " | 2.25 |

| For Under Coats. | | | |
|---|---|---|---|
| Hard drying body | $4.50 | Black rubbing varnish | $4.00 |
| Rubbing body varnish | 4.00 | Priming (1st coat) | 2.50 |
| Quick rubbing " | 3.50 | Filling (2d coat) | 2.50 |
| | | Rough stuff | 2.50 |

| For Inside Work. | | | |
|---|---|---|---|
| Best flowing varnish | $4.50 | Hard oil finish light | $2.75 |
| Best polishing " | 4.50 | " dark | 2.25 |
| Cabinet " | 3.00 | White copal | 4.00 |

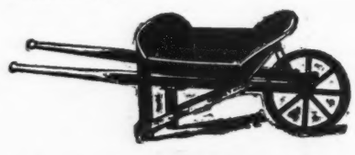
| Dryers. | | | |
|---|---|---|---|
| Japan gold size | $3.50 | Brown japan | $1.25 |
| Coach japan | 1.75 | Liquid dryer | 1.25 |

Discount, 40 per cent, f.o.b. N. Y.

| Preservative Coatings. | | | |
|---|---|---|---|
| Spar coatings | $4.00 | Exterior car coating | $4.00 |
| I. X. L. No. 1 | 2.50 | Interior car coating | 3.25 |
| I. X. L. No. 2 | 4.00 | Locomotive coating | 4.00 |
| Floor finish | 2.50 | | |

Discount, 35 per cent, f.o.b. N. Y.

**Wheelbarrows.**



Climax Bolted Barrow, with Wood Wheel per doz. $22.50.
1½ tire of iron.
Common Nailed Barrow per doz. $18.50.
" Bolted " " " 18.75.

| | | | | |
|---|---|---|---|---|
| Lansing's Patent Iron-Bolted Barrow, per doz., | | | | $25.50 |
| Capital Patent Bolted Dirt | " | " | " | 30.00 |
| Red oak or Government | " | " | " | 40.50 |
| Wharf | " | " | " | 72.50 |
| Mortar | " | " | " | 30.00 |
| Bent Handle Stone | " | " | " | 48.00 |
| Coal or Ore | " | " | " | 31.50 |
| Pig Metal or Casting | " | " | " | 40.50 |
| Brick Yard 20 inch Iron Wheel | " | " | " | 10 50 |

Globe Patent Bolted Garden Barrow } per doz., 42.50.
Box 30 by 24 by 12 deep, wood wheel }
Capita Patent Barrows
With Iron Tray, A, per doz., ..... $39.00
" " " B, " " ..... 42.00
The Leader Iron and Steel Barrows.
Gas-pipe Legs and Handles in one price.
No. 1 Tray of 16 iron, capacity 3 cu. ft. of earth, each $12.
No. 2 " 14 " " 5 " " " " "
or 250 lbs. of coal ..... " 15
Galvanized 18 iron, capacity same as No. 2 ..... " 15

**Water Wheels.** Pelton.

| | Under pressure of 30 Lbs. | 60 Lbs. | 100 Lbs. |
|---|---|---|---|
| No. 1, $25 | ⅛ H. P. | 1 H. P. | 2 1-10 H. P |
| No. 2, $50 | ¾ " | 2⅛ " | 5 " |
| No. 3, $100 | 1½ " | 4 " | 8½ " |
| No. 4, $1.0 | 2½ " | 7 " | 14¾ |
| No. 5, $20.0 | 4½ " | 12½ " | 26 |

Dis. 20%.

**Whiffletree.**

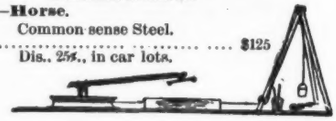
Willson spring Jeffery Manufacturing Company's.

| | Single. | Doz. lc. |
|---|---|---|
| No. 1, 34 or 36 inches long | $1.25 | $2.50 |
| No. 2, " " " | 1.40 | 2.75 |
| No. 3, " " " | 1.50 | 3.06 |
| No. 4, " " " | 1.65 | 3.25 |

Including either steel hooks or rings
Discount, 45 and 5%.

**Whims—Horse.**

Common sense Steel.
F. O. B ..... $125
Dis., 25%., in car lots.



**Windmills.**

| | | |
|---|---|---|
| 10 ft., pumping | $75 | Plus cost of packing. |
| 12 ft. " | 95 | |
| 14 ft. " | 140 | |
| 16 ft. " | 225 | |

Dis., 50 per cent.
Delivered on board of vessel at New York packed for export.
Dis., 45%.

"Stover" Pumping Windmills (no tower).

| Size wheel. | Wt. packed. | Cubic ft. | Price. |
|---|---|---|---|
| 10 ft. | 650 | 50 | $80.00 |
| 12 ft. | 750 | 58 | 100.00 |
| "Zenith" Pumping Windmills (no tower). | | | |
| 10 ft. | 650 | 48 | 85.00 |
| 12 ft. | 750 | 57 | 110.00 |
| Dis., 50 per cent. | | | |
| 14 ft. | 1,400 | 108 | 160.00 |
| 16 ft. | 1,600 | 114 | 250.00 |
| Dis., 45 per cent. | | | |
| 20 ft. | 2,950 | 220 | 400.00 |
| 25 ft. | 4,225 | 280 | 600.00 |
| Dis., 40 per cent. | | | |
| "Zenith" Geared Windmill (no tower). | | | |
| Prices include upper set of Gears and about 5 feet vertical extra heavy shaft in windmill head. | | | |
| 14 ft. | 1,550 | 178 | 260.00 |
| 16 ft. | 1,780 | 198 | 300.00 |
| 20 ft. | 3,170 | 216 | 500.00 |
| Dis., 40 per cent. | | | |

**Wire Rope.**

| Circumference in inches. | Diameter in inches. | Price in cents per foot best crucible cast steel rope. 19 wires to strand. | 7 wires to strand. | Price in cents per foot best bright iron rope. 19 wires to strand. | 7 wires to strand. | Price in cents per pound galvanized iron rope. 12 wires to strand. | 7 wires to strand. |
|---|---|---|---|---|---|---|---|
| 5½ | 1¾ | 100 | ..... | 69 | ..... | 11 | 10½ |
| 5¼ | ..... | 90 | ..... | 64 | ..... | " | " |
| 5 | 1⅝ | 80 | ..... | 58 | ..... | 11½ | " |
| 4¾ | 1½ | 71 | ..... | 53 | ..... | " | " |
| 4½ | ..... | 65 | ..... | 48 | ..... | " | " |
| 4¼ | 1⅜ | 60 | 60 | 43 | 39 | " | " |
| 4 | 1¼ | 50 | 50 | 36 | 34 | " | " |
| 3¾ | ..... | 46 | ..... | 33 | ..... | " | " |
| 3½ | 1⅛ | 41 | 40 | 29 | 27 | 12 | 10¾ |
| 3¼ | ..... | ..... | ..... | ..... | ..... | " | 11 |
| 3⅛ | 1" | 34 | 32 | 26 | 23 | ..... | ..... |
| 3 | ..... | 33 | ..... | 24 | ..... | " | 11 |
| 2¾ | ⅞ | 27 | 25 | 20 | 19 | ..... | 12 |
| 2½ | ..... | 23 | ..... | 18 | ..... | ..... | 13 |
| 2¼ | ¾ | 21 | 19 | 16 | 14 | ..... | |
| 2 | ⅝ | 18 | 14 | 14 | 10½ | ..... | |
| 1¾ | 9-16 | 17 | 11 | 12 | 8 | ..... | |
| 1½ | ½ | 15 | 8 | 10 | 7 | ..... | |
| 1¼ | ⅜ | ..... | ..... | 8 | 5 | ..... | |
| 1 | 5-16 | ..... | ..... | ..... | 4 | ..... | |

Discounts, for export in bond, requiring from six weeks time, 55%.